# Аэрокосмическая промышленность и оборона
# Описание


**По вопросам продаж и поддержки обращайтесь:**

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
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Вологда (8172)26-41-59
Воронеж (473)204-51-73
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Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
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Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
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Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
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Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Саранск (8342)22-96-24
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
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Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
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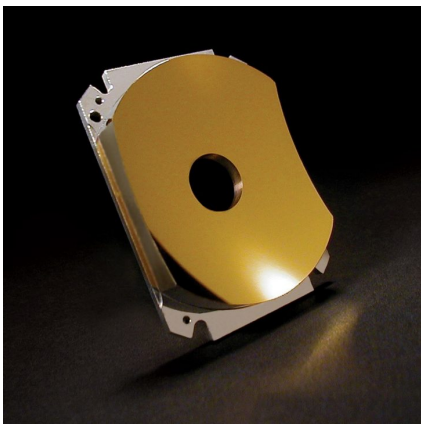
## Custom Optical Components

- Corning produces reflective and refractive optical components including aspheres and free-forms
- Corning has extensive experience with aspheric fabrication and testing: focal point testing with true conics, reflective null design and fabrication for higher order aspheres, and the use of computer generated holograms (CGH's)
- Free-form (*geometries*) — Corning engineers are experienced with producing complex free-form optical surfaces up to ø1 m
- Volume Production — Corning has capacity and experience to optimize fabrication processes for volume production requirements



## Diamond Turned Optics

The Corning Specialty Materials facility includes proprietary diamond turned optics systems for use in military, aerospace, and commercial applications. This process produces surfaces with drastically reduced or eliminated diffraction effects typically associated with diamond turning. It eliminates the need for post polishing which, in turn, reduces manufacturing time and costs, and also avoids the potential risk of altering the surface figure.

Diamond-turned reflective, refractive, and diffractive optical systems are manufactured for use in variety of military, aerospace, and commercial applications including tactical aircraft targeting, night vision, missile guidance, hyperspectral imagers, helmet mounted displays, medical, analytical instrumentation, and semiconductor optics.

**Precision Diamond Turning Capabilities**

- Geometries (Spheres, Aspheres, Flats, non-rotationally symmetric freeforms, diffractives, mirror arrays)
- Corning can achieve very accurate optical surfaces
(~1/4 wave at 0.6328 um or better depending on the design)
- Surface Finishes down to ~35 Å rms or better depending on base material and design
- White Light Interferometer, Profilometer, and Aspheric Null Testing

**Materials:**

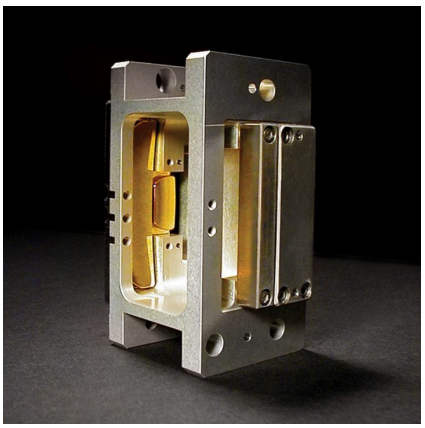
- Aluminum
- Copper
- Electroless Nickel
- Refractive Materials
- Germanium
- Zinc Selenide
- Zinc Sulfide
- CleartranTM Zinc Sulfide
- Silicon
- Calcium Fluoride

## Electro-Optical Infrared (EOIR) Systems

- Corning’s EOIR systems include:
  - ° Active Illumination: for targeting, LIDAR, or free-space telecommunication
  - ° Passive Imaging: single or multiple waveband systems for Intelligence, Surveillance and Reconnaissance (ISR)
  - ° Hyperspectral and multispectral: Visible through long wave systems for security and ISR applications
- Field of View (FOV) switching for multiple field of view applications (Corning has built systems with over 5 FOVs in a single payload)
- Zoom systems up to 30X with thermal compensation
- Passive or Active Thermal compensation demonstrated on tactical and space-based systems
- Weight reduction through extensive light-weighting and optical design optimization
- Reflective, Absorptive, and Multi-band Filters can be included in multi-element filter wheels, which could include calibration and reference standards.

## Opto-Mechanical Assemblies

Corning designs and fabricates opto-mechanical assemblies to meet our customer's demanding performance requirements.  Our OM solutions create value across many applications and environments.  Our expert team is experienced in delivering sophisticated custom solutions.



- All designs are optimized for manufacturability, performance and quality.
- Tolerance analysis and our fabrication experience are utilized to minimize adjustment during integration.
- A proven track record for producing systems: on budget, on schedule, and at specification.
- Corning utilizes optical and mechanical models to verify performance, fabrication, and test conditions.
- Prototype through volume production capacity and capability.

*Extreme durability and very low coefficient of expansion make Corning's missile radomes and dome and radome technology ideally suited for missile nosecones.*

## Versatile Machining, Environmental Durability

**Missile Radomes**

Corning produces a proprietary material, Corning® PYROCERAM®, for use in missile radomes. The glass ceramic material, produced by Corning since the 1950s, is opaque, gray in color, and has high strength, high elastic modulus, and uniform dielectric properties.

It can be manufactured on ogival* shapes, hemispheres, pressware sheets and various machined shapes.

**Missile Dome Technology**

Corning produces dome materials such as 9754 as well as has the ability to finish missile domes.

**Applications**

Tactical Missile Nosecones

Antenna Windows

Radomes

Solid Wave Guides

Hydrospace Systems

**Dimensions**

Ogival shapes: Up to 48 inches long x 20 inches diameter

Hemispheres: Up to 16 inches in diameter

Pressware Sheets: Up to 27 x 27 inches at 1.0 inch or 17 x 17 inches at 2.0 inches

*pointed arch

Corning® Pyroceram® glass-ceramic material is opaque, light gray in color, and has high strength, high elastic modulus, and uniform dielectric properties. It can be manufactured in ogival* shapes, hemispheres, pressware sheets, and various machined shapes.

* pointed arch

## Applications

Tactical Missile Nosecones
Antenna Windows
Radomes
Solid Wave Guides
Hydrospace Systems

## Dimensions

| | |
|---|---|
| Ogival Shapes | Up to 48 inches long x 20 inches diameter |
| Hemispheres | Up to 16 inches in diameter |
| Pressware Sheets | Up to 27 inches x 27 inches x 1 .0 inch or 17 inches x 17 inches x 2.0 inches |

## Physical Properties

| | |
|---|---|
| Water Absorption | < 0.01% |
| Softening Point | 1350 ˚C; 2462 ˚F |
| Gas Permeability | Impermeable |
| Density | 2.6 g/cm$^3$; 160 lb/ft$^3$ |
| Elastic Modulus | 120 x 10$^6$ kPa; 17.4 x 10$^6$ psi |

## Thermal Properties

| | |
|---|---|
| Coefficient of Linear Expansion | 57 x 10$^{-7}$/˚C — 32 x 10$^{-7}$/˚F (20 ˚C - 320 ˚C; 68 ˚F - 608 ˚F) |
| Thermal Conductivity | 0.0081 cal/(s·cm·˚C) — 2 BTU·ft/(h·ft$^2$·˚F) (mean 20 ˚C - 800 ˚C — 68 ˚F - 1472 ˚F) |
| Thermal Diffusivity | 0.0127 cm$^2$/s — 0.049 ft$^2$/h (mean 20 ˚C - 800 ˚C — 68 ˚F - 1472 ˚F) |
| Specific Heat | 0.233 cal/(g·K) — 0.233 BTU/(lb·˚F) (mean 20 ˚C - 800 ˚C — 68 ˚F - 1472 ˚F ) |

# INFRA RED TRANSMITTING GLASS

# 9754

*CORNING 9754 is a clear germanate glass composition material with excellent transmitting capabilities from ultraviolet to infrared. Good optical qualities combine with good environmental durability.*

## Excellent transmittance UV to NIR

50% UV cutoff at .33 microns to 50% IR cut off at 5.33 microns
(1.346 mm Thickness).

## Good environmental durability without coatings

## Good optical quality

Striae Grade A
Low inclusion count.

## Service to high heat to 650°C

## Low refractive Index

nd = 1.6601

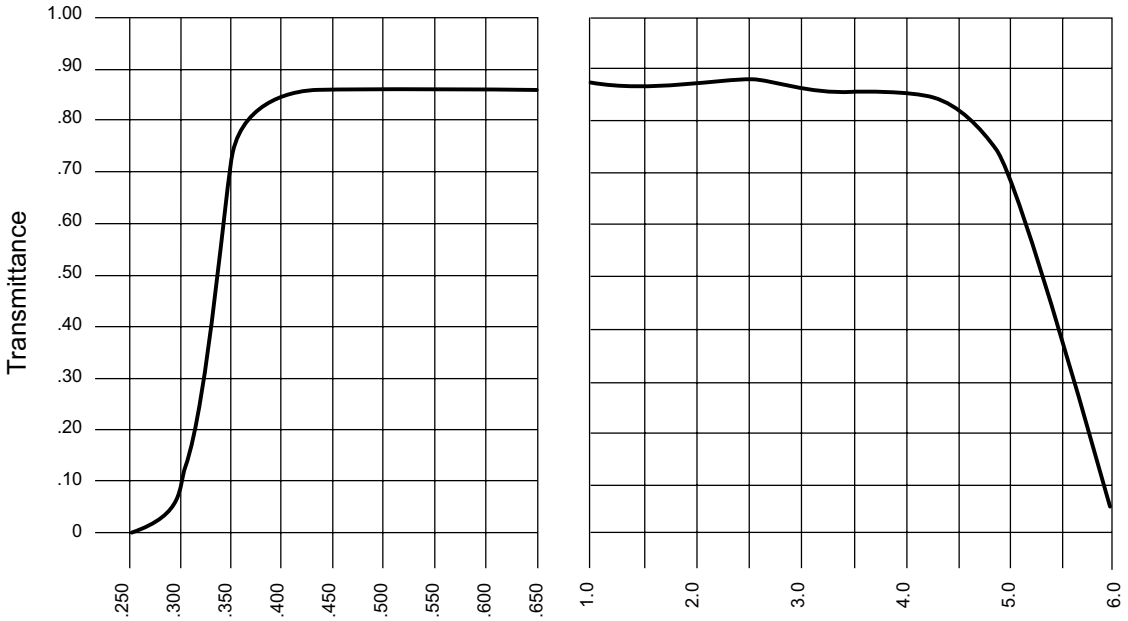
## Near net shapes

Offered in bars, cut plates or discs, molded blanks, and even polished blanks (in size up to 4” / 101.6 mm – for larger dimensions please contact us.)

# OPTICAL PROPERTIES

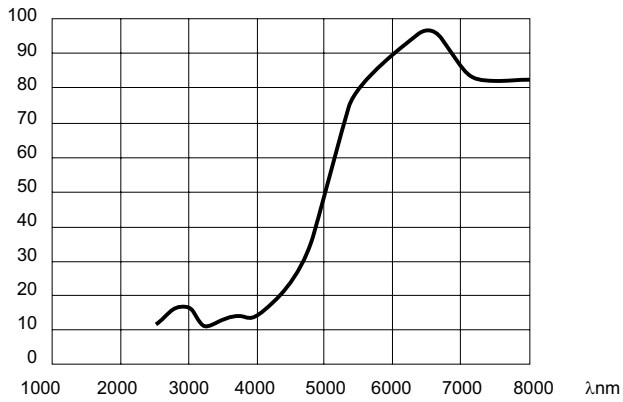
## TRANSMITTANCE OF 9754

1.346 mm THICKNESS INCLUDING SURFACE LOSSES

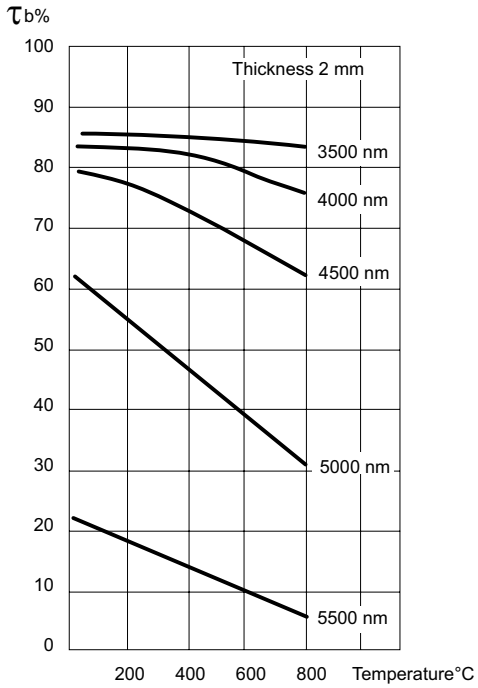



## SPECTRAL EMMITTANCE (ARBITRARY UNIT)

(T= + 200°C, 3.2 mm thick)




## TRANSMISSION VARIATIONS vs TEMPERATURE



## REFRACTIVE INDEX

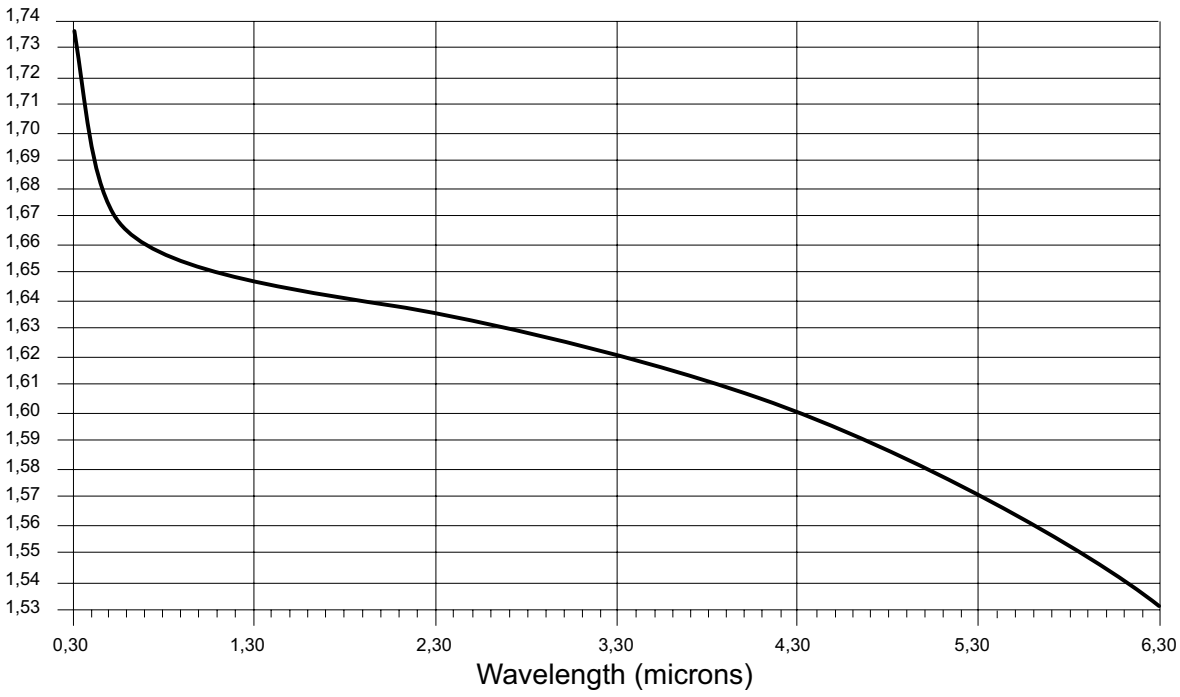
(+20°C)

| | | | | |
|---|---|---|---|---|
| nF (486.1 nm) | 1.6702 | nC (656.3 nm) | 1.6560 | Dispersion vd 46.5 |
| nd (589.3 nm) | 1.6601 | n (3.5 mircons) | 1.617 | |

| λ (nm) | Index | λ (nm) | Index | λ (nm) | Index |
|---|---|---|---|---|---|
| 400 | 1.69093 | 775 | 1.65511 | 2250 | 1.63505 |
| 425 | 1.68502 | 800 | 1.65431 | 2500 | 1.63203 |
| 450 | 1.68020 | 825 | 1.65358 | 2750 | 1.62874 |
| 475 | 1.67621 | 850 | 1.65289 | 3000 | 1.62514 |
| 500 | 1.67285 | 875 | 1.65226 | 3250 | 1.62119 |
| 525 | 1.67000 | 900 | 1.65167 | 3500 | 1.61686 |
| 550 | 1.66754 | 925 | 1.65112 | 3750 | 1.61214 |
| 575 | 1.66542 | 950 | 1.65060 | 4000 | 1.60698 |
| 600 | 1.66356 | 975 | 1.65011 | 4250 | 1.60135 |
| 625 | 1.66192 | 1000 | 1.64964 | 4500 | 1.59521 |
| 650 | 1.66046 | 1250 | 1.64595 | 4750 | 1.58853 |
| 675 | 1.65916 | 1500 | 1.64310 | 5000 | 1.58125 |
| 700 | 1.65800 | 1750 | 1.64049 | 5250 | 1.57332 |
| 725 | 1.65694 | 2000 | 1.63758 | 5500 | 1.56569 |
| 750 | 1.65599 | | | | |

## REFRACTIVE INDEX vs WAVELENGTH

CODE 9754 GLASS




## THERMAL COEFFICIENT OF REFRACTIVE INDEX

| Temperatures °C | Absolute coefficient — Wavelength (nm) | | | | | Relative coefficient — Wavelength (nm) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1060.0 | 643.8 C' | 546.1 e | 480.0 F | 435.8 g | 1060.0 | 643.8 C' | 546.1 e | 480.0 F' | 435.8 g |
| -40 | 7.9 | 8.8 | 9.3 | 10.2 | 11.1 | 10.3 | 11.2 | 11.7 | 12.7 | 13.5 |
| 0 | 8.7 | 9.6 | 10.1 | 11.0 | 11.9 | 10.4 | 11.4 | 11.9 | 12.8 | 13.6 |
| 100 | 10.7 | 11.6 | 12.1 | 13.0 | 13.9 | 11.6 | 12.5 | 13.1 | 14.0 | 14.8 |

## STRESS OPTICAL COEFFICIENT

262 nm/cm/kg/mm²

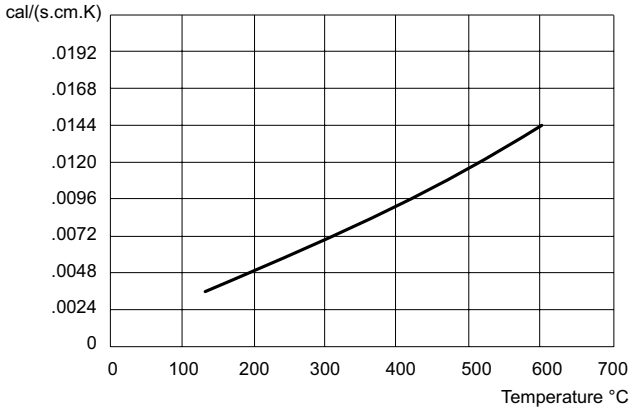
# MECHANICAL PROPERTIES

| | | |
|---|---|---|
| Specific gravity | 3.51 g/cm³ | |
| Young's modulus, 25°C | 12.2 x 106 psi | 8577 kg/mm² |
| Shear modulus, 25°C | 5.14 x 106 psi | |
| Modulus of rupture, 25°C, abraded | 6370 psi | 3613 kg/mm² |
| Poisson's ration, 25°C | 0.290 | |
| Knoop hardness, 100 g load | 560 kg/mm² | |

# THERMAL PROPERTIES

| | |
|---|---|
| Softening point | 874°C |
| Annealing point | 735°C |
| Strain point | 697°C |
| Service Temperatures: | |
| normal | 650°C |
| extreme | 680°C |
| Thermal conductivity | 0.01 W/cm°C |

Thermal conductivity




# ELECTRICAL PROPERTIES

| | | |
|---|---|---|
| Dielectric Constant | | |
| 350°C | 100 C thru 10 Kc | 9.95 |
| 400°C | 100 c | 10.08 |
| 400°C | 1 Kc | 10.08 |
| 400°C | 10 Kc | 10.05 |
| 550°C | 100 c | 10.61 |
| 550°C | 1 Kc | 10.41 |
| 550°C | 10 Kc | 10.35 |
| Loss Tangent | | |
| 25°C | 100 c | 0.00137 |
| 25°C | 1 Kc | 0.00137 |
| 25°C | 10 Kc | 0.00170 |
| 300°C | 100 c | 0.00115 |
| 300°C | 1 Kc | 0.00130 |
| 300°C | 10 Kc | 0.00150 |
| 550°C | 100 c | 0.072 |
| 550°C | 1 Kc | 0.013 |
| 550°C | 10 Kc | 0.0039 |
| Log DC resistivity | | |
| 350°C | | 14.9 ohm.cm |
| 450°C | | 12.5 ohm.cm |
| 550°C | | 10.5 ohm.cm |

# CHEMICAL PROPERTIES / WEATHERING

| | |
|---|---|
| Acid durability | |
| 10% HCL, 25°C, 30 seconds | no detectable weight loss or appearance change |
| 10% HCL, 25°C, 10 minutes | 0.648 mg/cm² weight loss; very slightly surface frosting |
| | |
| Weathering | |
| 98% relative humidity, 2 weeks | Deposit visible only with intense illumination |
| 98% relative humidity, 4 weeks | Deposit readily apparent in ordinary light |

## *Corning offers a full line of hyperspectral imaging sensor and system solutions.*

Corning Hyperspectral Imaging provides hyperspectral sensors and full hyperspectral systems for all applications including precision agriculture, industrial, environmental monitoring, mining and mineralogy.

Corning's microHSI™ family of hyperspectral sensors and systems combine the lowest size, weight and power (SWaP) in the industry with uncompromising performance, enabling deployment for challenging applications in limited payload and/or size constrained environments.

Corning acquired NovaSol in 2015. The acquisition combines NovaSol's strong technology portfolio and core competency in imaging solutions and over 17 years of experience in the industry with Corning's extensive production capabilities in optical systems and deep commitment to research and development.

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# microHSI™ 425 Sensor and microHSI™ 425 SHARK

*First commercially available single-sensor hyperspectral solution covering the full spectral range from 400-2500nm*

Corning has developed a miniaturized, lightweight hyperspectral sensor package, the microHSI™ 425 Sensor for space, airborne, industrial and scientific applications.

*microHSI™ 425 Sensor and SHARK*

The microHSI™ 425 is the first and only commercially available 400-2500 nm hyperspectral solution in a single sensor. This alleviates the need for integrating, precisely aligning and calibrating two separate sensors, and eliminates the complications of recording and post-processing imagery products from two sensors instead of one.

The microHSI™425 Sensor incorporates a single focal plane array and readout electronics package covering the entire spectral range from 400 to 2500 nm, mated with Corning's modular, compact spectrometer and fore-optics for commercial/industrial applications.

The compact spectrometer, when mated to a VISxSWIR focal plane array and a foreoptic, forms a Hyperspectral Imaging (HSI) sensor that is suited for a widely diverse range of applications including space, small manned and unmanned aerial vehicles, industrial process monitoring and other platforms and OEM applications requiring high quality imagery data covering the visible, near IR and SWIR spectra.

The spectrometer is coupled to a sterling-cooled 640 x 512 pixel HgCdTe focal plane array (FPA), with pixel size of 15 µm. The maximum frame rate (full-frame) is 120 Hz. The order sorting filter (OSF) is integrated in close proximity to the FPA, to maintain high performance throughout the wide wavelength range. The sensor has an f/3.3 aperture.

## Selectable Hyperspectral Airborne Remote-Sensing Kit (SHARK)

The microHSI™ 425 sensor, integrated with Corning's Selectable Hyperspectral Airborne Remote Sensing Kit (SHARK), comprises a coherent, turnkey airborne remote sensing system. The system is based on Corning's popular microHSI™ 410 Vis/NIR SHARK, currently in wide use for airborne agricultural monitoring and other remote sensing missions.

*microHSI™ 425 SHARK interfaces*

The flight package, including spectrograph, camera, telescope, navigation system, microcomputer and 1 TB of resident storage weighs 6 pounds (2.7 kg).

Command and control of the microHSI™ 425 SHARK is very similar to the 410 SHARK's web based GUI, requiring no other applications to be installed on the user's computer except for a compatible browser. Any browser that supports Java such as Internet Explorer® or Firefox® can be used. Alternately, the SHARK can be controlled by another device, through the Ethernet socket interface, sending commands detailed in the application programming interface (API).

### Key features include:

The ability to record the entire hyperspectral data cube (468 spectral bands), or to record only the bands needed to produce specific data products and solutions.

Digital elevation models for the area to be imaged can be downloaded before flight to improve post-processing orthorectification and geolocation accuracy.

Flexible image collection planning to capture only the area of coverage needed to optimize use of memory capacity and reduce post-processing time and complexity.

Ruggedized to withstand typical commercial and industrial applications when integrated with commercial manned and unmanned aircraft.

## microHSI™ 425 Sensor and microHSI™ 425 SHARK

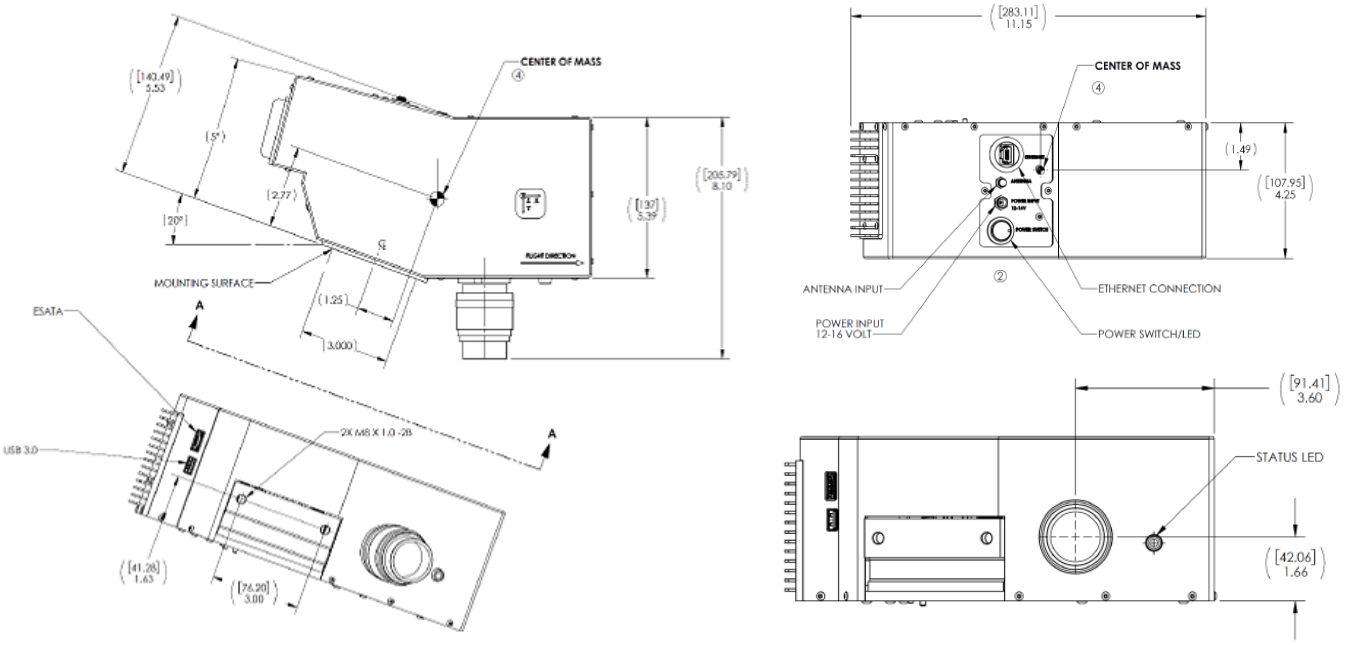
### Technical and Performance Characteristics

| | | |
|---|---|---|
| Pixel size (µm) | H (spatial)<br>V (spectral) | 15<br>15 |
| Lens Focal Length | mm | 25 |
| Frame Rate | Hz | 125 |
| Used Pixel Array | Spatial<br>Spectral | 640<br>468 |
| Dynamic Range | bits | 16 |
| Spectral range (µm) | Low<br>High | 400<br>2500 |
| Spectral Resolution (FWHM) | nm | ≤8 |
| Lens Aperture | f# | 3.3 |
| Weight | kg/lbs | 2.7/6.0 |
| Temperature Range (SHARK) | Operating<br>Storage | 5-4°C<br>0-60°C |
| Humidity | non-condensing | 10-90% |
| Power Consumption | watts | 30 |
| Voltage Range | VDC | 12 to 16 |

NOTE:
Specifications may be subject to revisions and updates; IP-rated version available beginning Q2, 2021

# microHSI™ 425 SHARK

## Dimensions




## About Corning Advanced Optics

Corning Advanced Optics is a world leader in the design, fabrication, and system integration of compact, high performance HSI sensors and sensor systems. Corning's line of microHSI™ sensors achieve their combination of low Size, Weight and Power (SWaP) and high spatial and spectral performance through a patented miniaturized solid optical block spectrometer design. This configuration embeds an inherently low optical aberration Offner relay spectrometer, with integrated high efficiency convex diffraction grating, into a solid optical block. Without air spacing, the light ray paths are highly condensed, resulting in the low SWaP and also providing mechanical and thermal robustness. Corning's microHSI™ solid block spectrometers are automatically aligned by design and manufacture, minimizing the thermal and shock misalignment risk due to independent optical component mounting in conventional sensors. The Offner configuration yields impeccable spectral fidelity and exceptional spatial resolution. The high efficiency reflective blazed grating and minimization of optical component surfaces due to the solid block design results in maximal transmission for superior signal to noise ratio performance. Corning microHSI™ sensors are co-developed with in-house designed high performance lenses to ensure preservation of both spectral and spatial fidelity. The microHSI™ spectrometer is designed specifically to work with a particular state-of-the-art FPA detector, ensuring integrated sensor performance optimization from the face of the lens to the digital electronic data output.

CORNING

# Corning® microHSI™ 410 SHARK

## Integrated, Coherent, Airborne Hyperspectral Imaging System


microHSI™ 410 SHARK
Integrated, Coherent, Airborne
Hyperspectral Imaging System

Corning Advanced Optics has developed the Corning® microHSI™ 410 SHARK (Selectable Hyperspectral Airborne Remote sensing Kit), an integrated, coherent hyperspectral imaging (HSI) sensor system designed specifically for integration with highly compact Unmanned Aerial Vehicles (UAVs), including low cost multi-rotor copters. With a weight of just 1.8 lbs., inclusive of self-contained battery, data acquisition and storage, and inertial navigation subsystem, the microHSI™ 410 SHARK enables HSI technology to be applied to a new world of applications using low-cost compact drones.

The microHSI™ 410 SHARK is not only compact and lightweight, it delivers exceptional spectral imaging performance. The microHSI™ 410 SHARK system includes Corning's 0.4 - 1.0 um hyperspectral sensor that employs state-of-the-art high quantum efficiency (QE) CMOS focal plane array (FPA) technology and a patented solid optical block Offner relay spectrometer. The microHSI™ 410 spectrometer features a high efficiency reflective, optimally blazed diffraction grating that is precision manufactured using Corning's proprietary diamond machining processes. The result is outstanding throughput and signal to noise ratio (SNR) performance combined with exceptional spectral fidelity and spatial resolution.

The microHSI™ 410 SHARK is a complete turn-key sensor system solution including the 0.4-1.0 um HSI sensor, a high efficiency microprocessor control and data acquisition subsystem with solid state data storage, a precision MEMS-based close coupled GPS/Inertial Navigation System (INS) generating navigational data for accurate geo-referencing of the HSI data, and a rechargeable, swappable battery. The standard microHSI™ 410 SHARK is designed for a minimum of 30 minute durations with a hot-swap of battery and data for minimal ground time. Extended mission duration options are available. HSI data can be saved as raw data (minimum size), and/or radiometric calibrated data, significantly reducing post-process time and streamlining workflow.

Corning has paid special attention in the design of the microHSI™ 410 SHARK to optimize it for the commercial remote sensing market and in particular, for precision agriculture, environmental terrain and vegetation assessment and management, and mineral exploration. The sensor and system are designed to for enhanced performance in the important near infrared (NIR) region of the spectrum. This is achieved through judicious high QE FPA selection and through Corning's proprietary grating technology.

## Unique Capabilities and Features

The microHSI™ 410 SHARK command and control functions are preprogrammed into the embedded processor. Users can simply access command and control functions with a browser from any PC, laptop or tablet.

For direct control of the SHARK from the UAV's on-board flight controller, an Ethernet socket-based message application program interface can be used to start, stop, calibrate, check status, and receive the waterfall, navigation, and histogram multicast data. Imagery can be recorded in raw or calibrated (radiance) form, with or without navigation data. The user can choose to record the full hyperspectral data cube or a subset of the bands. User defined band subsets can be created to reduce storage requirements enabling longer mission times, quicker data offloading and faster post-processing.

The user may operate the system manually, or choose from three pre-programmed, autonomous image/data collection modes.

Digital Elevation Models (DEMs) can be downloaded from the NASA EARTHDATA web site for the area to be imaged, and pre-programmed into the microHSI™ 410 SHARK. This, in combination with the integrated dual channel GPS, enables improved image geo-registration accuracy.

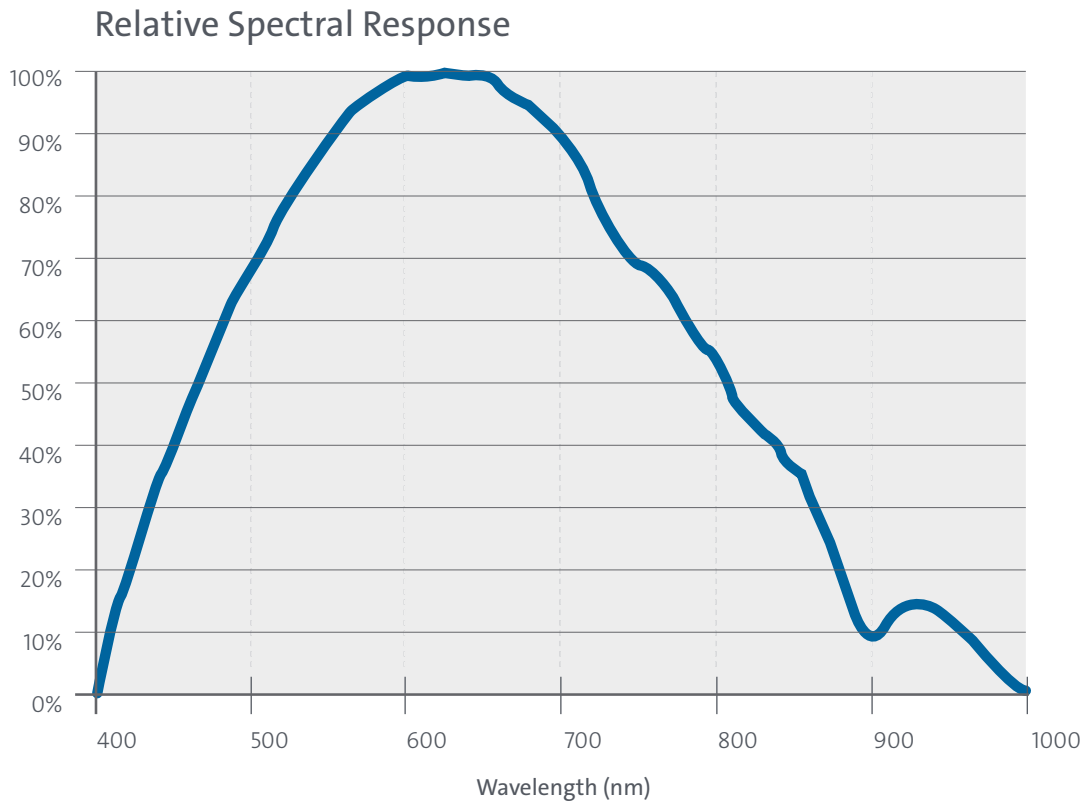
ENVI compatible Input Geometry (IGM) files containing latitude and longitude for every spatial pixel are created in real-time. The IGM files are used during post-flight geo-registration, image display and analysis.

Imagery can be displayed and analyzed using most commercially available spectral image processing software and web-based services that have an ENVI reader option or offer ENVI as part of their product portfolio.

## Corning® microHSI™ 410 SHARK Hyperspectral Imaging System Performance Characteristics

| | |
|---|---|
| Sensor Type | Push-broom Line Imaging Spectrometer |
| Spectrograph | Solid Block Offner |
| Grating | Diamond-Ruled High Efficiency Reflective Blazed |
| FPA Detector | CCD/CMOS hybrid 1408 spatial pixels |
| Effective Pixel Size — 2x binned | 11.7 µm |
| Effective Array Size — 2x binned | 704 spatial x 155 spectral |
| Focal Length, f/# | 16 mm, f/1.4 standard |
| Full FOV | 29.5 degrees (516 mrad) standard |
| IFOV | 366 µrad standard |
| Spectral Range | 400 nm – 1000 nm |
| Spectral Bin Size (per pixel) | 2 nm |
| Maximum Frame Rate | > 300 Hz (profile dependent) |
| Data Readout | 12-bit |
| INS | GPS + Mems IMU + Kalman filtered solution |
| Size (standard lens, processor, data storage, INS) | 5.37" x 3.44" x 2.77" with lens (3.77" x 3.44" x 2.77" without lens) |
| Weight (standard lens, data storage, INS) | 1.5 lb. (0.68 kg) |
| Power Consumption (complete system) | < 19 W @ 12 VDC |
| Etendue | 50 steradian $um^2$ |

## Relative Spectral Performance




## Potential Applications for the Corning® microHSI™ 410 SHARK Include:

### Commercial Remote Sensing

- Precision agriculture
- Mineral / petroleum exploration
- Pipeline / power line / thruway inspection
- Terrain / vegetation / urban characterization

### Reconnaissance Applications

### Dual-use UAV Applications

- Search and rescue
- Disaster mitigation
- Environmental assessment and monitoring
- Humanitarian assistance

# About Corning Advanced Optics

Corning Advanced Optics is a world leader in the design, fabrication, and system integration of compact, high performance HSI sensors and sensor systems. Corning's line of microHSI™ sensors achieve their combination of low Size, Weight, and Power (SWaP) and high spatial and spectral performance through a patented miniaturized solid optical block spectrometer design. This configuration embeds an inherently low optical aberration Offner relay spectrometer, with integrated high efficiency convex diffraction grating, into a solid optical block. Without air spacing, the light ray paths are highly condensed, resulting in the low SWaP and also providing mechanical and thermal robustness. Corning's microHSI™ solid block spectrometers are automatically aligned by design and manufacture, minimizing the thermal and shock misalignment risk due to independent optical component mounting in conventional sensors. The Offner configuration yields impeccable spectral fidelity and exceptional spatial resolution. The high efficiency reflective blazed grating and minimization of optical component surfaces due to the solid block design results in maximal transmission for superior signal to noise ratio performance. Corning microHSI™ sensors are co-developed with in-house designed high performance lenses to ensure preservation of both spectral and spatial fidelity. The microHSI™ spectrometer is designed specifically to work with a particular state-of-the-art FPA detector, ensuring integrated sensor performance optimization from the face of the lens to the digital electronic data output.


# Hyperspectral Imaging Application Development Kit

*Corning's Application Development Kit allows the development of hyperspectral technology applications and algorithms.*

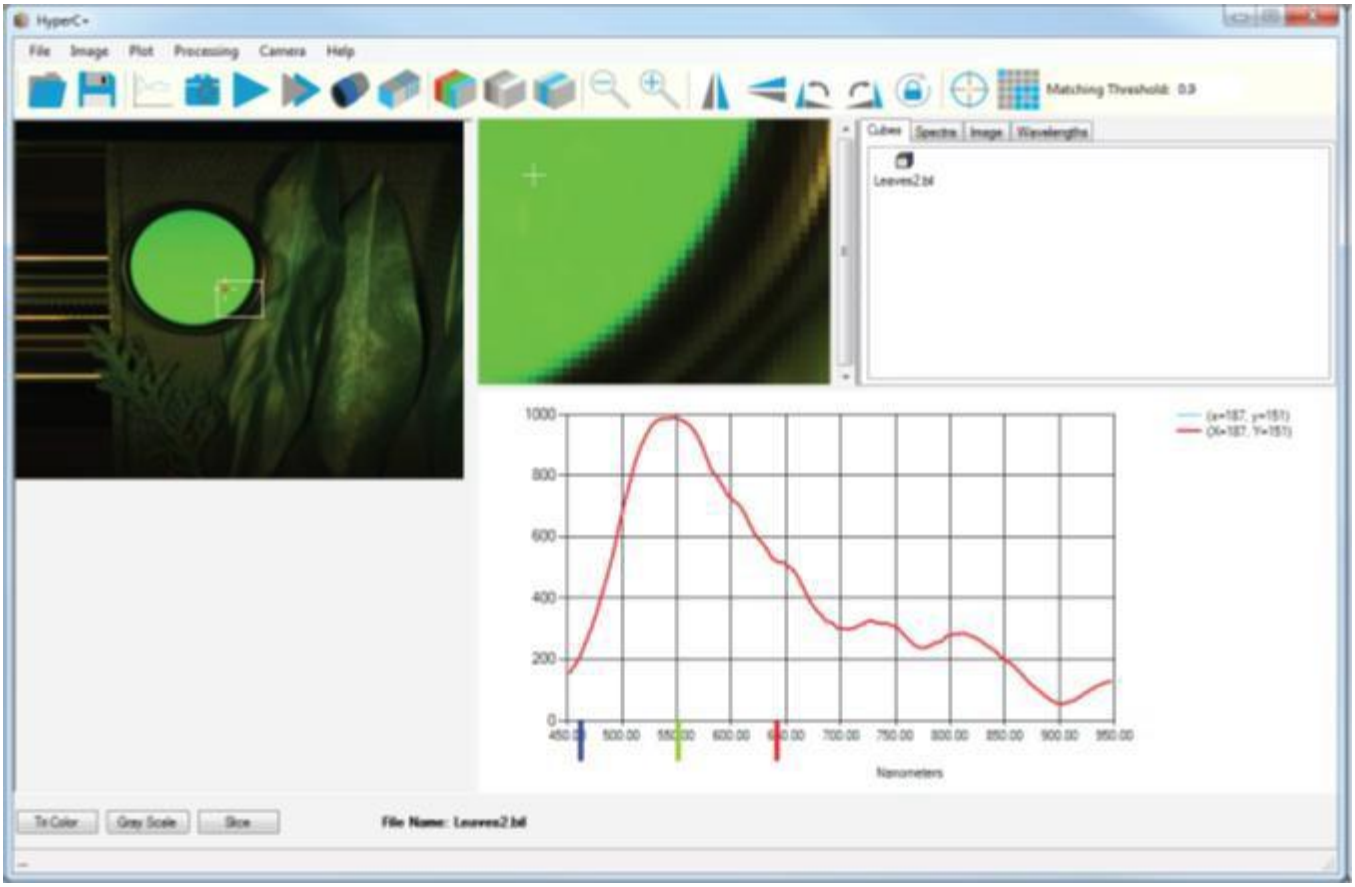
The HSI Application Development Kit (ADK) provides the essential tools needed to explore, evaluate and experience the benefits of hyperspectral imaging technology first hand. The kit allows the user to develop techniques to solve real world problems using hyperspectral technology. The ADK kit hardware capabilities cangrow with a user's needs.

The ADK is supported by a family of powerful HSI sensor modules that cover spectral ranges from the visible, vis-NIR, NIR, SWIR, and LWIR spectral regions.

The lab-bench based vis-NIR ADK includes a high sensitivity patented vis-NIR HSI module configured for push-broom scanning, with a motorized linear-translation stage and an ultra-stable light source (both require 120VAC power). The system is controlled via HyperC+ software (included) running on a user supplied Windows based PC, laptop or tablet. The kit can be configured to translate the sample relative to the sensor (small samples) or to translate the sensor relative to the sample (to support large samples).

For field work Corning offers an alternative configuration. The vis-NIR sensor is fitted with an optional plug-and-play optical scan head incorporating a servo-mirror capable of acquiring complete hyperspectral data-cubes.
This simplifies collection of remote sensing data from larger scenes meters to kilometers away.
This stand-alone scanning sensor is controlled by HyperC+ software installed on a tablet (included) via a mini-USB (providing power).

Application Development Kit




Sample HSI ADK Screen Shot


# Corning® vis-NIR and alpha-vis Hyperspectral Sensors

*Corning's microHSI™ sensors provide high throughput, excellent spectral resolution and superior spatial resolution in a revolutionarily compact package, with low SWaP for airborne UAV and/or turret integration.*

With 680 spatial pixel swath format, the vis-NIR microHSI™ is ideal for limited payload applications. Three spectral ranges and frame rates up to 86Hz provide up to 180 bands of spectral resolution over the 380 nm-1000 nm near uv/visible/near infrared spectral region.

The alpha-vis microHSI™ hyperspectral sensor is a unique combination of high velocity/altitude ratio capability with high spatial and spectral resolution. It supports a combination of high collection rates, wide area coverage (with its 1280 pixel swath) and >1200 Hz sampling. The alpha-vis microHSI™ provides up to 40 bands with high spectral fidelity over the 400 nm-800 nm visible region. A 350-1000 nm version is also available.

Corning's microHSI™ incorporate a patented solid block offner relay spectrometer, resulting in vis-NIR sensors weighing less than one pound, enabling integration of hyperspectral sensing capability into small airborne and ground platforms, turreted systems for complex multi-sensor or multi-mission applications, and constrained industrial sites.

As with all Corning sensors, the microHSI™ achieves its high spatial, spectral, and sensitivity performance through a completely integrated optical system design, in contrast to sensors assembled from independent components.

Corning can provide individual vis-NIR hyperspectral sensors for customer integration or complete integrated systems incorporating multiple sensors, real time and on-board data exploitation, and user processing station support.


vis-NIR and alpha-vis

NOVASOL MICRO HSI™

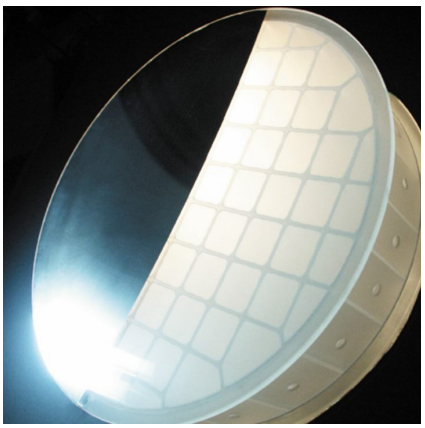
# Corning® vis-NIR and alpha-vis Hyperspectral Sensors

## Hyperspectral Imager Performance Characteristics

| | vis-NIR microHSI™ | alpha-vis microHSI™ |
|---|---|---|
| Sensor Type | Line Imager | Line Imager |
| Spectrograph | Solid Block Offner Relay | Solid Block Offner Relay |
| Grating | Blazed High-Efficiency Reflective | Blazed High-Efficiency Reflective |
| FPA Format | 1360 x 1040, 6.45 µm pitch µlens array CCD | CMOS FPA, 6.5 µm pixel size |
| Spatial Swath | 680 pixels (2x bin) | 1280 pixels (2x bin) |
| Focal Length , f/# | 16 mm, f/2.5; 33 mm, f/2.0 | 195 mm, f/2.6 |
| Full FOVs | 30 or 15 | 4.9 |
| IFOV | 770 µrad or 385 µrad (others available) | 67 µrad (others available) |
| Standard GSD | 154 cm or 77 cm at 2000 m AGL | 13 cm at 2000 m AGL |
| Spectral Range (nm) | A) 400-800; B) 400-1000; C) 380-880 | A) 400-800; B) 350-1000 |
| Spectral Resolution / bands | 3.3 nm, (2x bin): A) 120; B) 180; C) 150 bands | 10 nm, (2x bin): A) 40; B) 60 bands |
| Typical Spectral Readout / bands | 10 nm, (6x bin): A) 40; B) 60; C) 50 bands | 10 nm, (2x bin): A) 40; B) 60 bands |
| Keystone | < 2 µm (est.) (over 1360 x 360 pixels) | < 3 µm (est.) (over 1360 x 360 pixels) |
| Smile | < 1 µm (est.) (over 1360 x 360 pixels) | < 1 µm (est.) (over 1360 x 360 pixels) |
| Frame Rate | A) 86 Hz; B) 67 Hz; C) 76 Hz | A) 1280 Hz; B) 800 Hz |
| Max SNR (max res) | 265 | 335 |
| Max SNR (typical res) | 460 | 335 |
| Data Readout | 12 bit gig-E | Camera Link |
| Size | 4.8" x 3.6" x 2.5" | 8.5" x 4.5" x 3.0" |
| Weight | < 1 lb (< 0.45 kg) | < 4.6 lb (< 2.1 kg) |
| Power | < 3.3 W @ 12VDC | < 10 W typical, <20 W max @ 12VDC |

Alternative Focal Lengths and IFOVs available

## Telescope Mirror Blanks and Lens Blanks



Corning has a rich history in space exploration, producing mirrors for the Hubble, Gemini, and Subaru telescopes; along with providing window glass for all of NASA's manned spacecraft missions and the International Space Station. These mirrors are made of Corning's ultra low expansion ULE® glass, a material that exhibits virtually no dimensional changes over extreme temperature variations and is generally considered the best in the world for astronomical optics.

The light-weighting techniques used in the Hubble mirror have been extended to other space program and ground-based astronomy applications. Reducing the weight of these large mirrors - sometimes down to one eighth the weight of an equal sized solid mirror -- allows changes to the superstructure for ground-based telescopes, helping to reduce costs and extending functionality.

Corning continues to develop and expand the use of this telescope mirror technology. Current and future space-based telescopes may contain Corning mirrors that are less than 10 percent of the weight of an equal-sized solid mirror. The technology has been adapted for use in the geostationary (GOES) weather satellites, which are key U.S. resources for weather, hydrologic, and climate forecasts.

Corning HPFS® Fused Silica is a material of choice for large transmissive optics in astronomical applications. HPFS® boules can be formed as large as 1.75m in diameter and with excellent index homogeneity. Nominally all measurements within a boule are < 4ppm Δn. Material is available in smaller blank sizes that meet 3 ppm and as low as < 1.5ppm Δn. This material has been used in recent programs such as the LBT 40” correctors, Keck upgrade prisms, Smithsonian Hectochelle multi-purpose spectrograph, Pan-STARRS optics, and the Dark Energy Survey Camera.

*With over 50 years of leading-edge microwave design experience, we offer Gilbert® high-precision, high-performance connectors used in telecommunications, test, measurement, aerospace, and defense.*

## Microwave Connectivity Solutions

When precision and performance are critical elements in your network, our microwave solutions are designed to meet those requirements with field-tested and customized product sets. We collaborate with you to create tailored design solutions including multi-position blocks, hermetic shrouds, cable connectors, PCB mounts, blind mate interconnects, loads, and adapters. Through those collaborations and our dedication to the state-of-art tools, we created high-precision, high-performance G3PO™ connectors for frequencies up to 100 GHz, and G4PO™ connectors with center-to-center spacing as little as 0.07-in.

## GPO® Interconnect Series

Our GPO® interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.17 in and weighs just .17 g. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA, 2.4 mm, and 2.92 mm.

## GPPO® Interconnect Series

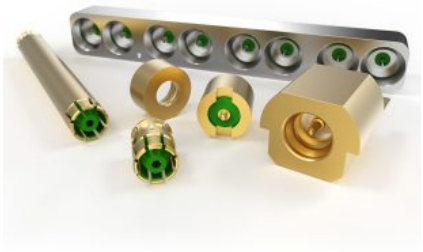
Our GPPO® interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.135 in and weighs just .09 g. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA, 2.4 mm, and 1.85 mm.

## G3PO™ Interconnect Series

Our G3PO™ interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.085 in and weighs just .20 mg. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA , 2.4 mm, and 1.85 mm.

## G4PO™ Interconnect Series

Our G4PO™ interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.070 in and weighs just 5.0 mg. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA, 1.85 mm, and 2.92 mm.



CORNING

# Gilbert® Microwave Connectors

## GPO® Interconnect Series

When precision and performance are critical elements in your network, our microwave solutions are able to meet those requirements with field-tested and customized product sets. Initially developed for the demanding requirements of military applications, our microwave products include high-precision, high-performance mini connectors. Providing best-in-class performance and reliability, these products are now used in telecommunications, test and measurement, wireless, and satellite networks.

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### Environmental Performance*

| | |
|---|---|
| Thermal Shock | MIL-STD-202, Method 107, Condition B |
| Vibration | MIL-STD-202, Method 204 |
| Moisture Resistance | MIL-STD-202, Method 106, Except Step 7B |
| Salt Spray | MIL-STD-202, Method 101 |
| Shock | MIL-STD-202, Method 213, Condition I |

*Performance listed is typical. Individual part configuration may vary. Contact our technical team for more information and specification by part number.

†Engage/disengage forces are not typical when mated with ASTM-F15 shrouds .010-in

### Product Characteristics*

| | |
|---|---|
| Impedance | 50 Ohms |
| Frequency | DC to 26.5 GHz, performance available to 40 GHz |
| Temperature Range | -65° C to +165° C |
| Center Conductor Contact Resistance | 6.0 milliohms max., inner conductor<br>2.0 milliohms max., outer conductor |
| Insulation Resistance | 5,000 megaohms min. |
| VSWR | 1.15:1 to 26.5 GHz typ.; < 1.50:1 to 40 GHz typ. |
| DWV @ Sea Level | 500 Vrms |
| Corona Level @ 70,000 ft | 190 Vrms |
| RF High Pot. @ 5 MHz | 325 Vrms |
| Center Contact Retention | 1.5 lbs min. (captivated designs) |
| Radial Misalignment | +/-0.010 in |
| Axial Misalignment | 0.010-in (flush to -0.010-in from the reference plane) |
| Force to Disengage† | 9.0 lbs typ. full detent, 7.0 lbs limited detent, 0.5 lbs typ. smooth bore |
| Force to Engage† | 7.0 lbs typ. full detent, 5.0 lbs typ. limited detent, 3.0 lbs typ. smooth bore |

A010-L13-02

A1A1-0001-01

A007-L43-01-TAB-R

A008-L13-01

A014-B11-01

A032-L13-01-T

CORNING

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| | |
|---|---|
| Thermal Shock | MIL-STD-202, Method 107, Condition B |
| Vibration | MIL-STD-202, Method 204 |
| Moisture Resistance | MIL-STD-202, Method 106, Except Step 7B |
| Salt Spray | MIL-STD-202, Method 101 |
| Shock | MIL-STD-202, Method 213, Condition I |

*Performance listed is typical. Individual part configuration may vary. Contact our technical team for more information and specification by part number.

†Engage/disengage forces are not typical when mated with ASTM-F15 shrouds.

### Product Characteristics*

| | |
|---|---|
| Impedance | 50 Ohms |
| Frequency | DC to 65 GHz |
| Temperature Range | -65° C to +165° C |
| Center Conductor Contact Resistance | 6.0 milliohms max., inner conductor<br>2.0 milliohms max., outer conductor |
| Insulation Resistance | 5,000 megaohms min. |
| VSWR | 1.10:1 to 26.5 GHz typ.; 1.30:1 to 50 GHz typ. |
| DWV @ Sea Level | 325 Vrms |
| Corona Level @ 70,000 ft | 125 Vrms |
| RF High Pot. @ 5 MHz | 200 Vrms |
| Center Contact Retention | 1.5 lbs min. (captivated designs) |
| Radial Misalignment | +/-0.010 in |
| Axial Misalignment | 0.010-in (flush to -0.010-in from the reference plane) |
| Force to Disengage† | 6.5 lbs typ. full detent,<br>1.5 lbs typ. smooth bore |
| Force to Engage† | 4.5 lbs typ. full detent,<br>2.5 lbs typ. smooth bore |


B001-L45-15


B1B1-0001-01


B007-M43-01-TAB


B008-L13-01


B010-L13-01


B014-B11-01

CORNING

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## G3PO™ Interconnect Series

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Our G3PO™ interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.085 in and weighs just .20 mg. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA , 2.4 mm, and 1.85 mm.

### Environmental Performance*

| | |
|---|---|
| Thermal Shock | MIL-STD-202, Method 107, Condition B |
| Vibration | MIL-STD-202, Method 204 |
| Moisture Resistance | MIL-STD-202, Method 106, Except Step 7B |
| Salt Spray | MIL-STD-202, Method 101 |
| Shock | MIL-STD-202, Method 213, Condition I |

*Performance listed is typical. Individual part configuration may vary. Contact our technical team for more information and specification by part number.

†Engage/disengage forces are not typical when mated with ASTM-F15 shrouds.

### Product Characteristics*

| | |
|---|---|
| Impedance | 50 Ohms |
| Frequency | DC to 65 GHz |
| Temperature Range | -65° C to +165° C |
| Center Conductor Contact Resistance | 6.0 milliohms max., inner conductor<br>2.0 milliohms max., outer conductor |
| Insulation Resistance | 3,500 megaohms min. |
| VSWR | 1.10:1 to 26.5 GHz typ.; 1.25:1 to 65 GHz typ. |
| DWV @ Sea Level | 250 Vrms |
| Corona Level @ 70,000 ft | 100 Vrms |
| RF High Pot. @ 5 MHz | 150 Vrms |
| Center Contact Retention | 0.75 lbs min. (captivated designs) |
| Radial Misalignment | +/-0.010 in |
| Axial Misalignment | 0.010-in (flush to -0.010-in from the reference plane) |
| Force to Disengage† | 4.5 lbs typ. full detent,<br>1.0 lbs typ. smooth bore |
| Force to Engage† | 2.5 lbs typ. full detent,<br>1.2 lbs typ. smooth bore |


R1R1-0001-01


R007-L43-05-TAB-R


R010-L13-03


R012-T95-01


R014-B11-01


R032-L43-01-T

CORNING

# Gilbert® Microwave Connectors

## G4PO™ Interconnect Series

When precision and performance are critical elements in your network, our microwave solutions are able to meet those requirements with field-tested and customized product sets. Initially developed for the demanding requirements of military applications, our microwave products include high-precision, high-performance mini connectors. Providing best-in-class performance and reliability, these products are now used in telecommunications, test and measurement, wireless, and satellite networks.

Our G4PO™ interconnect series offers a blind mate interconnect that has a center-to-center spacing of 0.070 in and weighs just 5.0 mg. This series is designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change to ensure high performance in high-stress environments. Within this series, we also offer adapters available to SMA, 1.85 mm, and 2.92 mm.

### Environmental Performance*

| | |
|---|---|
| Thermal Shock | MIL-STD-202, Method 107, Condition B |
| Vibration | MIL-STD-202, Method 204 |
| Moisture Resistance | MIL-STD-202, Method 106, Except Step 7B |
| Salt Spray | MIL-STD-202, Method 101 |
| Shock | MIL-STD-202, Method 213, Condition I |

*Performance listed is typical. Individual part configuration may vary. Contact our technical team for more information and specification by part number.

†Engage/disengage forces are not typical when mated with ASTM-F15 shrouds .010 in

### Product Characteristics*

| | |
|---|---|
| Impedance | 50 Ohms |
| Frequency | DC to 60 GHz |
| Temperature Range | -65° C to +165° C |
| Center Conductor Contact Resistance | 6.0 milliohms max., inner conductor<br>2.0 milliohms max., outer conductor |
| Insulation Resistance | 3,500 megaohms min. |
| VSWR | 1.15:1 to 15 GHz typ.; 1.25:1 to 60 GHz typ. |
| DWV @ Sea Level | 250 Vrms |
| Corona Level @ 70,000 ft | 100 Vrms |
| RF High Pot. @ 5 MHz | 150 Vrms |
| Center Contact Retention | 0.75 lbs min. (captivated designs) |
| Radial Misalignment | +/-0.005 in |
| Axial Misalignment | 0.007-in (flush to -0.007-in from the reference plane) |
| Force to Disengage† | 2.2 lbs typ. full detent,<br>0.15 lbs typ. smooth bore |
| Force to Engage† | 0.65 lbs typ. full detent,<br>0.20 lbs typ. smooth bore |


2-S1A-S1A-16-L0


S1S1-0001-01


S007-L43-02-TAB-R


S007-L43-04-T


S010-L13-01


S032-L43-05-T

# Reference Guide

## Symbols

| | | | |
|---|---|---|---|
| **CC** | Center Conductor | **FD** | Full Detent |
| **LD** | Limited Detent | **mm** | Millimeter |
| **MP** | Microporous | **PCB** | Printed Circuit Board |
| **R/A** | Right Angle | **R/P** | Reference Plane |
| **S/R** | Semi-Rigid | **SB** | Smooth Bore |
| **SQ** | Square | **Ø** | Diameter |
| **RF** | Radio Frequency | **GHz** | Gigahertz |
| **dB** | Decibels | **VSWR** | Voltage Standing Wave Ratio |
| **CM** | Catchers Mitt | | |
| **XD** | Extra Deep | **SI** | Short Interface |

## Standard Tolerances

All dimensions are in inches, interpretation per ANSI Y14.5.

.XX ± .010
.XXX ± .005
Fractions ± 1/64
Angular ± 5º
Typical machine surface finish 63 micro inches

## Common Materials and Finishes

- Beryllium copper per ASTM B 196 and/or ASTM B 197. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- CRES 303 per ASTM A 484 and ASTM A 582 or ASTM A 555 and ASTM A 581. Passivate per SAE AMS 2700.
- Brass per ASTM B 16. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Virgin TEFLON® PTFE fluorocarbon per ASTM D 1710.
- KOVAR® Iron-nickel-cobalt sealing alloy per ASTM F 15. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Corning® 7070 glass or equivalent.
- Ultem® 1000 (Polyetherimide) per ASTM D 5205.
- Torlon® (Polyamide-Imide) per ASTM D 5204.

## Detent

A captivation system was developed for the GPO®, GPPO®, G3PO™ and G4PO® interconnect systems that provides predictable levels of retention without the use of bulky coupling nuts. This feature is characterized as the connector's detent.

The GPO product is designed with three available detent levels, and two detents exist within the smaller GPPO, G3PO and G4PO series. This is accommodated by the incorporation of a ring in the male pin connector (commonly known as the shroud). This 'detent ring' interacts with the mating connector (female contact) to captivate the pair together.

Each of the detent levels, full detent, limited detent (available only in the GPO series), and smooth bore (or zero detent) provide different levels of force required to mate and de-mate the connectors.

| | **Engage*** | | | | **Disengage*** | | | | **Cycles*** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GPO | GPPO | G3PO | G4PO | GPO | GPPO | G3PO | G4PO | GPO | GPPO | G3PO | G4PO |
| **Full Detent** | 7.0 lbs | 4.5 lbs | 2.5 lbs | .65 lbs | 9.0 lbs | 6.5 lbs | 4.5 lbs | 2.2 lbs | 100 min | 100 miin | 100 min | 100 min |
| **Limited Detent** | 5.0 lbs | N/A | N/A | N/A | 7.0 lbs | N/A | N/A | N/A | 500 min | N/A | N/A | N/A |
| **Smooth Bore** | 3.0 lbs | 2.5 lbs | 1.2 lbs | .20 lbs | 0.5 lbs | 1.5 lbs | 1.0 lbs | .15 lbs | 1000 min | 500 min | 500 min | 500 min |

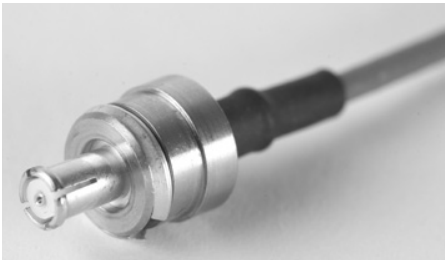
* The figures listed for the engage/disengage forces are typical and based upon actual data.

Proper care should be used when designing your system to select the required forces for engaging and disengaging.
The level of detent selected will also have an impact on the number of engage/disengage cycles. Note, female cable connectors MUST be used with a full detent male to maintain a fully mated condition during shock and vibration.

# Cable Assemblies

In addition to providing our worldwide customers with superior connectors and components, at Corning Gilbert, we also offer cable assemblies as an integrated, value-added service. Our goal is to provide our customers with the shortest lead time and lowest priced solution for cabled Corning Gilbert connectors. To accomplish this, we:

- Specialize in single plane, semi-rigid and flexible commercial and military test application cable assemblies.
- Make custom test inspection document available upon the customer's request.
- Provide excellent lead times.
- Help you find the right connector for your system by granting access to customized point-to-point solutions.



Please see the list below for all available Corning Gilbert connectors and its associated cable types.

| Corning Gilbert Connector Type | Cable Types | Impedance | Frequency Range |
|---|---|---|---|
| GPO | RG-178, RG-316, .086 Semi Rigid, Storm Products 120 and 421-720 | 50 Ohm | DC to 26.5 GHz |
| GPPO | .047 and .086 Semi Rigid, Storm Products 421-721 | 50 Ohm | DC to 65 GHz |
| G3PO | .047 Semi Rigid and .058 Flex | 50 Ohm | DC to 65 GHz |
| SMA | RG-316, .047, .086 and .141 Semi Rigid, Storm Products 120 and 421-1110 | 50 Ohm | DC to 26.5 GHz |
| GMS | .086 and .141 Semi Rigid | 50 Ohm | DC to 26.5 GHz |
| TNC | .086, and .141 Semi Rigid, Belden 9292 | 50 and 75 Ohm | DC to 11 GHz |
| BNC | RG-59, HEC 59 | 50 and 75 Ohm | DC to 4 GHz |
| N | RG-59, RG-6, RG-11, RG-8, RG-223/224, .086, .141 and .250 Semi Rigid, Storm Products 190 and 385 | 50 and 75 Ohm | DC to 11 GHz |
| F | RG-178, RG-179, RG-59, RG-6, RG-11, HEC 59 | 50 and 75 Ohm | DC to 1 GHz is typical, High Performance types available to 3 GHz. |
| SMB | RG-316, RG-179 | 50 and 75 Ohm | DC to 4 GHz |
| MCX | RG-316, RG-179 | 50 and 75 Ohm | DC to 6 GHz |
| MMCX | RG-316, RG-179 | 50 and 75 Ohm | DC to 6 GHz |

# Adapter Matrices

The chart listed below is designed to aid in locating the appropriate adapter by application. All adapters can be found on pages 107 through 131 in this catalog.

NOTE: The X in the part numbers below refers to a detent-tabbed item. Replace the X with a 3 for a Full Detent, a 4 for a Limited Detent, or a 5 for a Smooth Bore. Not all detents are available for all adapters. All part numbers in purple indicate parts made to order.

| GPO/GPPO/G3PO/G4PO Adapters | | | | | | | |
|---|---|---|---|---|---|---|---|
| | GPO (M) | GPO (F) | GPPO (M) | GPPO (F) | G3PO (M) | G3PO (F) | G4PO (M) |
| 1.85mm (M) | 1AXM2-0509-01 | 1A1M2-0509-01 | 1BXM2-0509-01 | 1B1M2-0509-01 | 1RXM2-0503-01 | 1R1M2-0509-01 | |
| 1.85mm (F) | 1AXM1-0509-01 | 1A1M1-0509-01 | 1BXM1-0509-01 | 1B1M1-0509-01 | 1RXM1-0503-01 | 1R1M1-0509-01 | 1SXM1-0503-01 |
| 2.4mm (M) | 1AXC2-0509-01 | 1A1C2-0521-01 | 1BXC2-0503-01 | 1B1C2-0501-01 | 1RXC2-0503-01 | 1R1C2-0501-01 | |
| 2.4mm (F) | 1AXC1-0503-01 | 1A1C1-0503-01 | 1BXC1-0503-01 | 1B1C1-0501-01 | 1RXC1-0503-01 | 1R1C1-0501-01 | |
| 2.92mm (M) | 1AXD2-0503-01 | 1A1D1-0501-01 | 1BXD2-0503-01 | 1B1D2-0501-01 | 1RXD2-0503-01 | 1R1D2-0501-01 | 1SXD2-0503-01 |
| 2.92mm (F) | 1AXD2-0503-01 | 1A1D1-0503-01 | 1BXD1-0503-01 | 1B1D1-0503-01 | 1RXD1-0503-01 | 1R1D1-0503-01 | |
| SMA (M) | 1A3F2-0503-01 | 1A1F2-0503-01 | 1BXF2-0503-01 | 1B1F2-0503-01 | 1RXF2-0503-01 | 1R1F2-0503-01 | |
| SMA (F) | 1AXF1-0503-01<br>1AXF1-0513-03<br>1AXF1-0513-05<br>1AXF1-0523-01 | 1A1F1-0503-01 | 1BXF1-0503-01 | 1B1F1-0503-01 | 1RXF1-0509-01 | 1R1F1-0503-01 | |
| GPO (M) | A3AX-0539-01 | | | 1B1A3-0541-01 | | | |
| GPO (F) | A1AX-0503-01 | *A1A1-0001-XX | | | | | |
| GPPO (M) | | | BXBX-0523-01<br>BXBX-0523-02 | | | | |
| GPPO (F) | | | | *B1B1-0001-XX | | | |
| G3PO (F) | | | | | | *R1R1-0001-XX | |

**XX refers to bullet lengths. GPO, GPPO and G3PO Blindmate interconnect bullets are available in different lengths. Please consult the factory for information on bullet lengths not found in this catalog.*

| GMS Adapters | | SGMS Adapters | | |
|---|---|---|---|---|
| | GMS (M) | GMS (F) | SGMS (F) | SGMS (M) |
| SMA (M) | 00218-400-3 | 00218-200-3<br>00218-201-3 | 00218-201-3 | |
| SMA (F) | 00218-300-3<br>00218-301-3 | 00218-100-3<br>00218-101-3 | 00218-101-3 | 1F1P5-0503-01 |
| SGMS (F) | | | 1881-001-1 | |

# Table of Contents

# Table of Contents (Continued)


# Connect to Precision and Performance

Corning is one of the world's leading innovators in materials science. For more than 165 years, we have applied our unparalleled expertise in specialty glass, ceramics, and optical physics to develop products that have created new industries and transformed people's lives.

Our Optical Communications segment delivers connectivity to every edge of the network, from optical fiber, cable, hardware, and equipment to fully-optimized solutions for high-speed communications networks.

With over 50 years of leading-edge design experience, Corning Optical Communications RF LLC offers Gilbert® high-performance connectors used in telecommunications, test, measurement, aerospace, and defense.

ISO 9001:2015 certified

# Custom Designs

To quickly design and manufacture specialized interconnects meeting unique electrical, mechanical, and environmental specifications, our expert engineers, technicians, and machinists will collaborate with you on a custom design for your application.

Our tailored design solutions include multiposition blocks, hermetic shrouds, cable connectors, PCB mounts, blind mate interconnects, loads, and adapters. Special packaging is also available, such as custom trays, as well as tape and reel for automated pick and placement. Other customizable options include various plating and solder dipping.

A typical design cycle begins with a discussion with a dedicated Corning applications engineer to understand your interconnect requirements. Our library of designs is used as a basis for assessing your needs so that your exact requirements may be met with the highest efficiency.

After receipt of order, our design engineer will create 3D CAD models which are optimized for electrical performance using electromagnetic simulation software to enable tuning for a specific frequency range or broadband performance. Complex designs may require mechanical analysis using finite element analysis software.

Complete with high-precision Swiss turning centers and CNC mills, our dedicated machine shop is equipped to produce the custom designs you need. We also maintain a plating shop for passivation or plating of metallic components. Many validation tests are performed in-house. Electrical tests include voltage standing wave ratio, dielectric withstanding voltage, and insulation resistance. Mechanical tests include durability and mating forces. Environmental tests include thermal cycling, humidity, and salt spray.

# Corning Optical Communications RF LLC

**1957**


Gilbert Engineering was founded in Arizona

**1990**

Created the second generation push-on connector, GPPO®

**1984**

Developed the first push-on microwave connector, GPO®

**1992**

Oak Industries acquired Gilbert Engineering

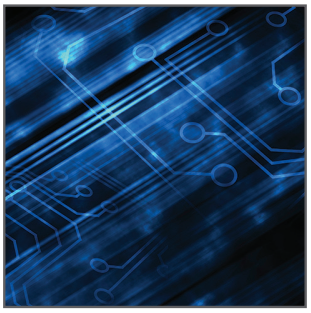
**2000**

Corning Incorporated acquired Gilbert Engineering

**2003**

Created the third generation push-on connector, G3PO™

**2005**



Gilbert Engineering was integrated into Corning Optical Communications

**2010**

Created the fourth generation push-on connector, G4PO™

**2016**

Invested in technology team to enhance R&D capabilities

# Reference Guide

## Symbols

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CC** | Center Conductor | **LD** | Limited Detent | **RF** | Radio Frequency | **SQ** | Square |
| **CM** | Catcher's Mitt | **mm** | Millimeter | **R/P** | Reference Plane | **VSWR** | Voltage Standing Wave Ratio |
| **dB** | Decibel | **MP** | Microporous | **SB** | Smooth Bore | **XD** | Extra Deep |
| **FD** | Full Detent | **PCB** | Printed Circuit Board | **SI** | Short Interface | **Ø** | Diameter |
| **GHz** | Gigahertz | **R/A** | Right-Angle | **S/R** | Semi-Rigid | | |

## Common Materials and Finishes

- Beryllium copper per ASTM B 196 and/or ASTM B 197. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- CRES 303 per ASTM A 484 and ASTM A 582 or ASTM A 555 and ASTM A 581. Passivate per SAE AMS 2700.
- Brass per ASTM B 16. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Virgin Teflon® PTFE fluorocarbon per ASTM D 1710.
- Kovar® iron-nickel-cobalt sealing alloy per ASTM F 15. Gold plate per ASTM B 488 over electrolytic nickel per SAE AMS QQ N 290.
- Corning® 7070 glass or equivalent.
- Ultem® 1000 (Polyetherimide) per ASTM D 5205.
- Torlon® (Polyamide-Imide) per ASTM D 5204.

## Standard Tolerances

All dimensions are in inches, interpretation per ASME Y14.5.

.XX ± .010

.XXX ± .005

Fractions ± 1/64

Angular ± 5º

Typical machine surface finish 63 micro-inches

## Detent

A captivation system was developed for the GPO®, GPPO®, G3PO™ and G4PO™ interconnect systems that provides predictable levels of retention without the use of bulky coupling nuts. This feature is characterized as the connector's detent.

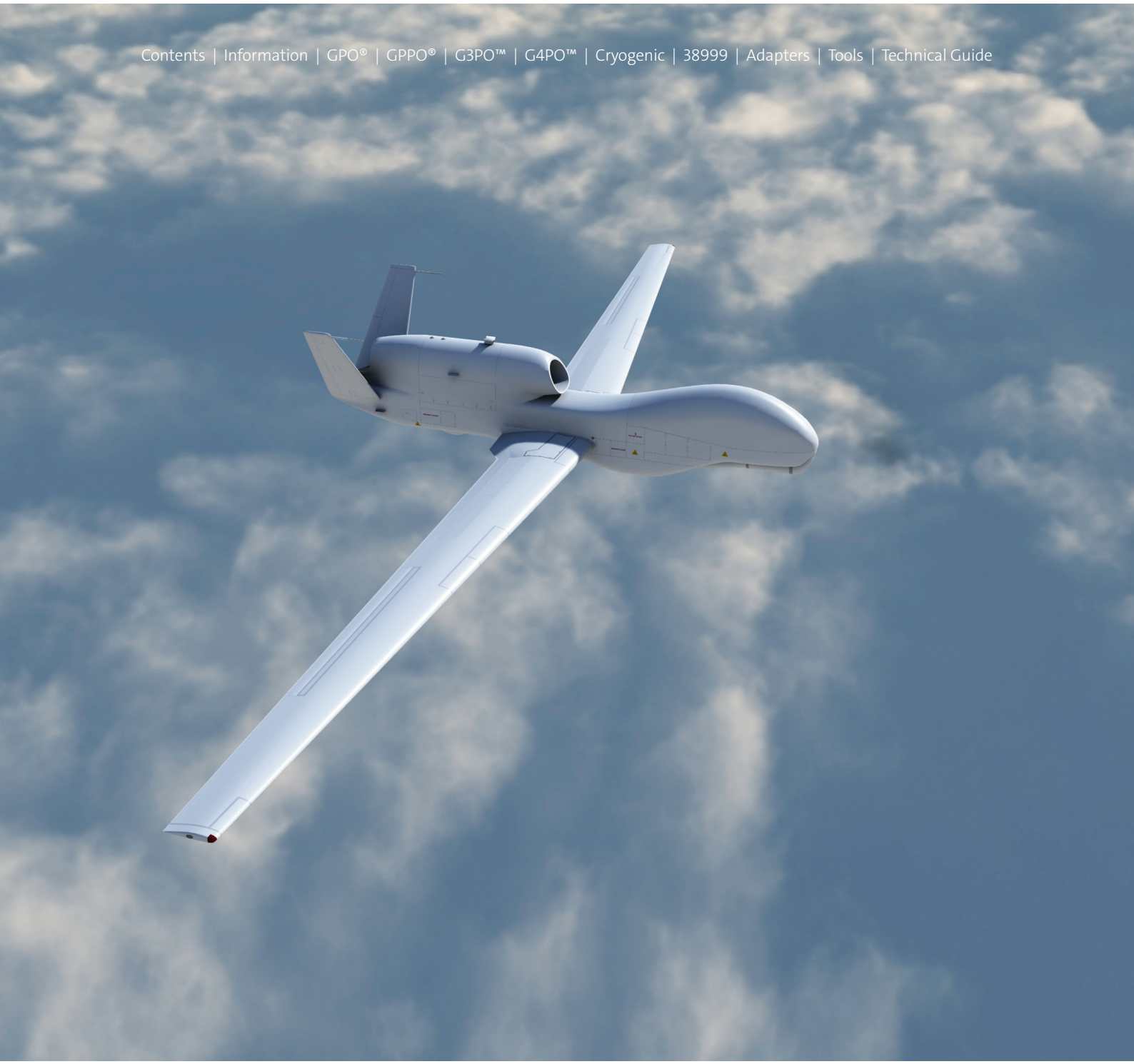
The GPO product is designed with three available detent levels. For the smaller GPPO, G3PO, and G4PO series, two detent options exist. This is accommodated by the incorporation of the interface detent in the male pin connector (commonly known as the shroud). The interface detent is the means of captivation when mating with the female contact connector.

Each of the detent levels, full detent, limited detent (available only in the GPO series), and smooth bore (or zero detent) provide different levels of force required to mate and demate the connectors.

| | Engage* | | | | Disengage* | | | | Cycles* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GPO | GPPO | G3PO | G4PO | GPO | GPPO | G3PO | G4PO | GPO | GPPO | G3PO | G4PO |
| Full Detent | 7.0 lbs | 4.5 lbs | 2.5 lbs | .65 lbs | 9.0 lbs | 6.5 lbs | 4.5 lbs | 2.2 lbs | 100 min | 100 min | 100 min | 100 min |
| Limited Detent | 5.0 lbs | N/A | N/A | N/A | 7.0 lbs | N/A | N/A | N/A | 500 min | N/A | N/A | N/A |
| Smooth Bore | 3.0 lbs | 2.5 lbs | 1.2 lbs | .20 lbs | 0.5 lbs | 1.5 lbs | 1.0 lbs | .15 lbs | 1,000 min | 500 min | 500 min | 500 min |

* The figures listed for the engage/disengage forces are typical and based upon actual data.

Proper care should be used when designing your system to select the required forces for engaging and disengaging. The level of detent selected will also have an impact on the number of engage/disengage cycles. Note: female cable connectors MUST be used with a full-detent male to maintain a fully mated condition during shock and vibration.



# GPO® Products

- Center-to-center spacing of 0.170-in available for increased package density
- Frequency from DC to 40 GHz
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) charge
- Generically known as sub-miniature push-on (SMP)

# GPO® Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | 50 Ohms nominal |
| **Frequency range** | DC to 40 GHz |
| **Temperature range** | -65°C to 165°C |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | 1.15:1 to 26.5 GHz typical; < 1.5:1 typical to 40 GHz |
| **Insertion loss** | .04 √f (GHz) |
| **DWV @ sea level** | 500 $V_{rms}$ |
| **Insulation resistance** | 5,000 megohms minimum |
| **Contact resistance** | |
| **Outer conductor** | 2 milliohms maximum |
| **Inner conductor** | 6 milliohms maximum |
| **RF leakage** | -80 dB to 3 GHz, -65 dB to 26.5 GHz |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | FD - 100 min, LD - 500 min, SB - 1,000 min |
| **Force to engage/disengage** | FD - 7.0 lb typ/9.0 lb typ |
| | LD - 5.0 lb typ/7.0 lb typ |
| | SB - 3.0 lb typ/0.5 lb typ |
| **Tolerated misalignment** | |
| **Radial** | +/- 0.0010 |
| **Axial** | 0.010 (flush to 0.010 from the reference plane) |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |
| **Springs** | 17-7 Stainless Steel per ASTM A313-95A |

## Finish (typical)

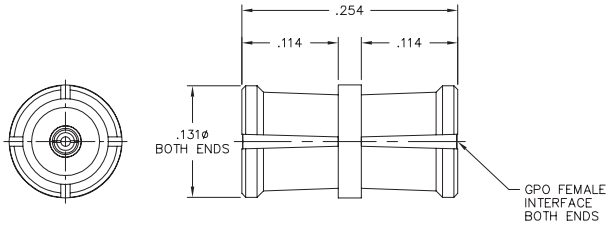
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |

# GPO® Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) Connector – Standard

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| A1A1-0001-02 | .224 | A095-A99-01 | - | |
| A1A1-0001-01 | .254 | A095-A99-01 | - | |
| A1A1-0001-07 | .286 | A095-A99-01 | - | |
| A1A1-0001-03 | .395 | A095-A99-01 | - | |
| A1A1-0001-44 | .420 | A095-A99-01 | - | |
| A1A1-0001-25 | .517 | A095-A99-01 | - | |
| A1A1-0001-21 | 1.000 | A095-A99-01 | - | |
| A1A1-0001-42 | 1.471 | A095-A99-01 | - | |

*Many more bullet lengths are available upon request. Contact for details.




A1A1-0001-01

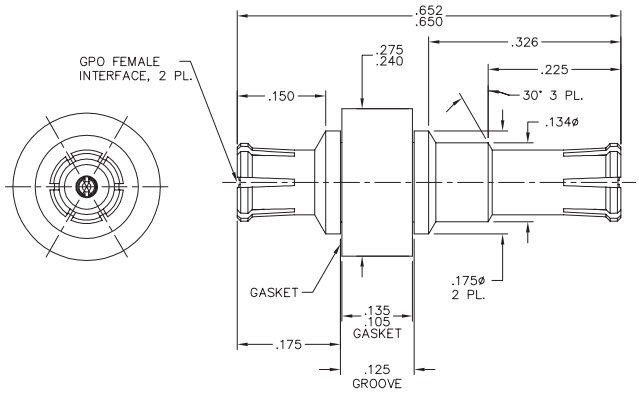
A1A1-0001-01

A1A1-0001-25

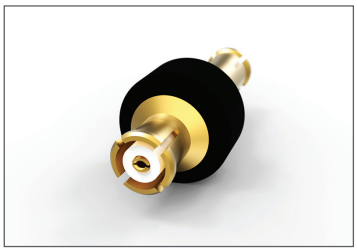
## Female Blind Mate Interconnect (Bullet) Connector – Alignment Features

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| A1A1-0001-35 | .621 | A095-A99-01 | - | Gasket included* |
| A1A1-0001-24 | .651 | A095-A99-01 | - | Gasket included* |
| A1A1-0001-71-1856 | 1.856 | A095-A99-01 | - | Gasket included* |

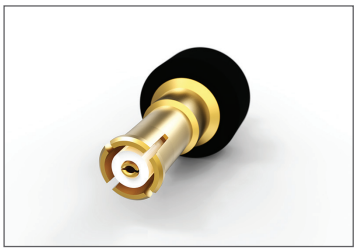
*O-rings and gaskets are for alignment only and are not to be used for shielding applications.




A1A1-0001-24



Front: A1A1-0001-24



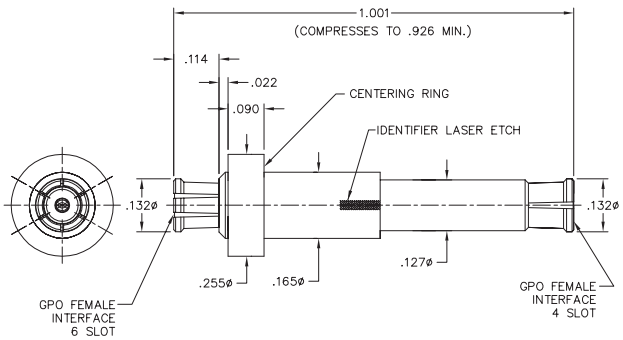
Back: A1A1-0001-24

# GPO® Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) Connector – Spring Loaded/Self-Adjusting

| Catalog Number | Relaxed Length (inches) | Compressed Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|---|
| A1A1-0001-09 | .675 | .600 | A095-A99-01 | - | |
| A1A1-0001-34 | .777 | .702 | A095-A99-01 | - | |
| A1A1-0009-04 | .806 | .731 | A095-A99-01 | - | |
| A1A1-0009-08 | .840 | .765 | A095-A99-01 | - | |
| A1A1-0009-05 | 1.001 | .926 | A095-A99-01 | - | |
| A1A1-0009-01 | 1.470 | 1.395 | A095-A99-01 | | |
| A1A1-0009-06 | 2.259 | 2.184 | A095-A99-01 | - | |

*O-rings and gaskets are for alignment only and are not to be used for shielding applications.




A1A1-0009-05

Front: A1A1-0009-05

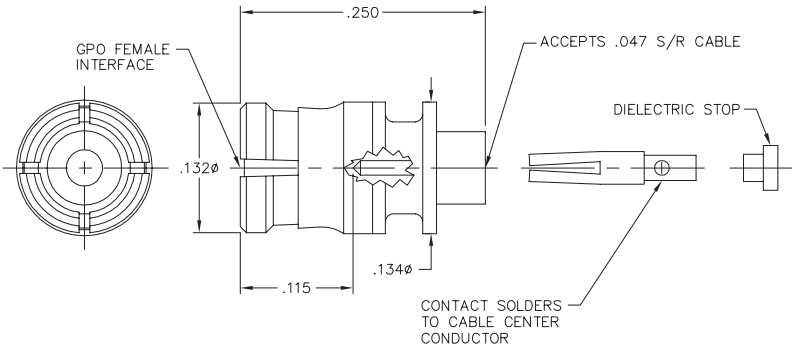
Back: A1A1-0009-05

# GPO® to .047 Cable Connectors

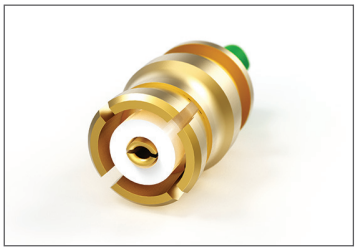
## Female Straight to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-B11-01 | A098-A98-08/A098-A99-10/A098-A99-02, A096-A99-02, A096-A99-06, L096-A99-02 | AP01-002 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPO® female straight connectors are available.




A014-B11-01

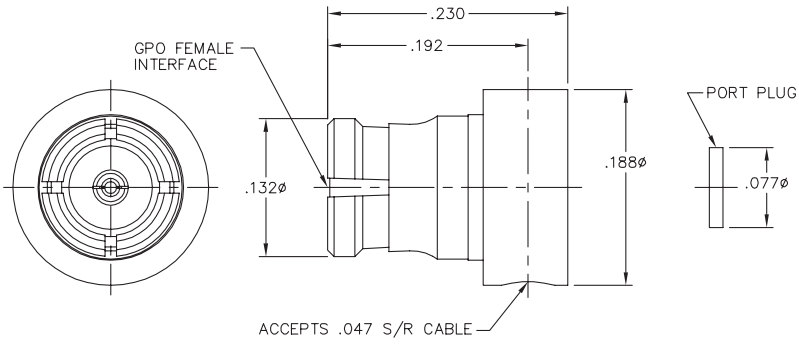


A014-B11-01

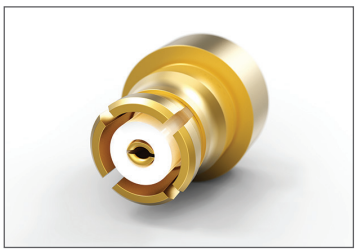
## Female Right-Angle (R/A) to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A015-B11-01 | A096-A99-01, A096-A99-07, L096-A99-02, A098-A99-08 | AP01-097 | |
| A015-B11-02 | A096-A99-01, A096-A99-07, L096-A99-02, A098-A99-08 | AP01-097 | |
| A015-B71-03 | A096-A99-01, A096-A99-02 L096-A99-02, A098-A99-08 | AP01-073 | Swept contact |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPO female right-angle connectors are available.




A015-B11-01



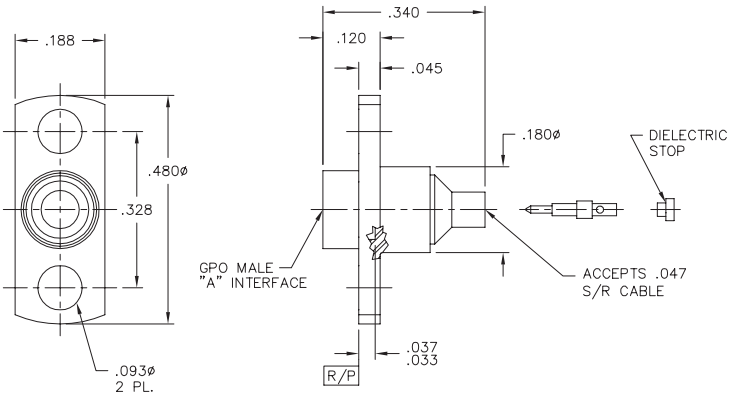
A015-B11-01

# GPO® to .047 Cable Connectors

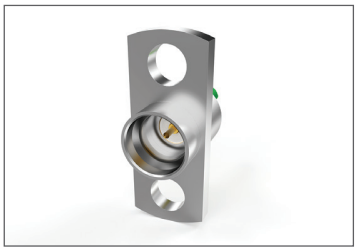
## Male Flange Mount to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-B8X-01[1] | A096-A99-03, A096-A99-04, L096-A99-02 | AP01-014 | Flange diameter Ø.480<br>Flange width .188<br>Hole spacing .328<br>Hole size Ø.093 |
| A001-B8X-02[1] | A096-A99-03, A096-A99-04, L096-A99-02 | AP01-014 | Flange diameter Ø.400<br>Flange width .188<br>Hole spacing .282<br>Hole size Ø.073 |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPO® male flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A001-B8X-01

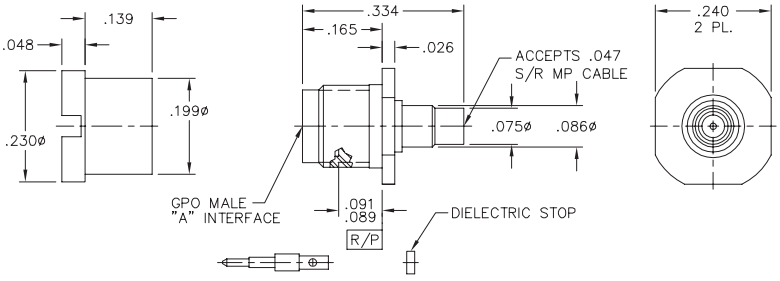


A001-B8X-01

## Male Bulkhead to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A016-B8X-01[1] | A096-A99-03, A096-A99-04, Fixture OSI Model No. T-4567, A097-A99-04 (FD)/A097-A99-05 (LD)/A097-A99-06 (SB) | AP01-063 | |
| A016-B85-04 | A096-A99-03, A096-A99-04, Fixture OMNI Model No. T-4567, A097-A99-04 | AP01-023 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPO male bulkhead connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A016-B8X-01

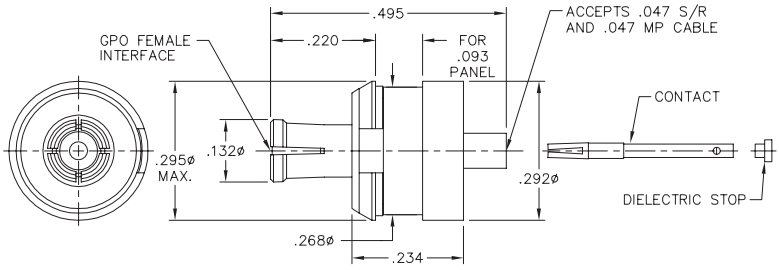
A016-B8X-01

# GPO® to .047 Cable Connectors

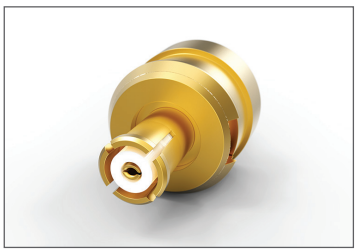
## Female Snap-In to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A018-B71-01 | A096-A99-02, A096-A99-06, L096-A99-02, A098-A99-05 | IS-7822-1 | |
| A018-B71-02 | A096-A99-02, A096-A99-06, L096-A99-02, A098-A99-05 | IS-7822-1 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPO® female snap-in connectors are available.




A018-B71-01

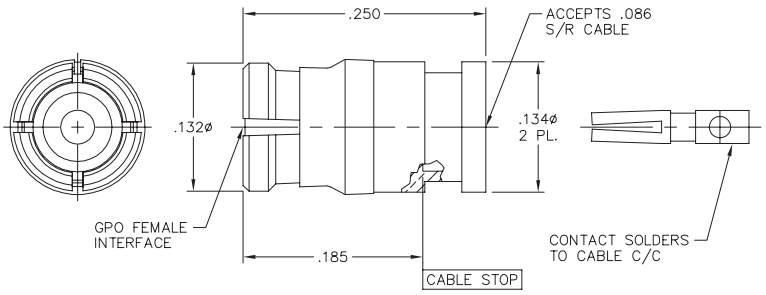


A018-B71-01

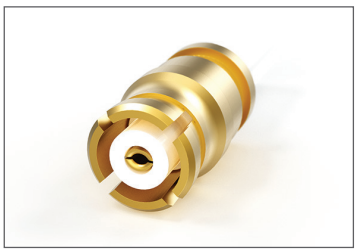
## Female Straight to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-D11-01 | A098-A98-08/A098-A99-10/A098-A99-02, A096-A99-06, L096-A99-01 | AP01-114 | Includes anti-rock/EMI ring |
| A014-D71-01 | A098-A98-08/A098-A99-10/A098-A99-02 | - | Includes anti-rock/EMI ring |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO female straight connectors are available.




A014-D11-01



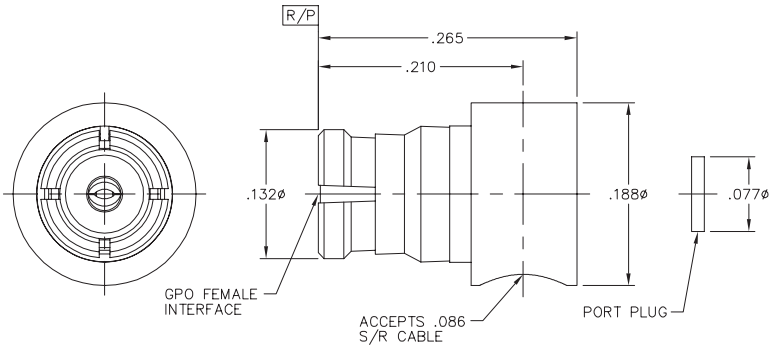
A014-D11-01

# GPO® to .086 Cable Connectors

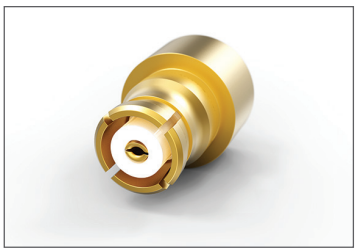
## Female Right-Angle (R/A) to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A015-D11-01 | A096-A99-01, A096-A99-07, L096-A99-01 | AP01-115 | |
| A015-D11-03 | A096-A99-01, A096-A99-07, L096-A99-01 | AP01-072 | Swept contact |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO® female right-angle connectors are available.




A015-D11-01

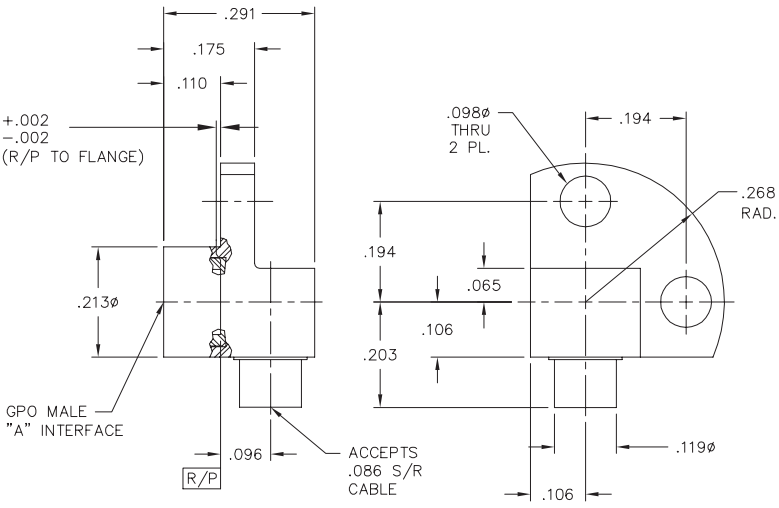


A015-D11-01

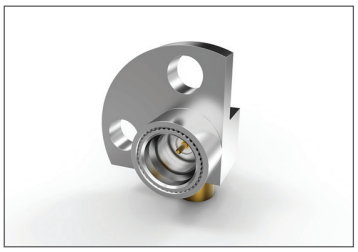
## Male Right-Angle (R/A) to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A015-D3X-04[1] | A096-A99-04 | AP01-038 | Mirror of A015-D3X-04 |
| A015-D3X-05[1] | A096-A99-04 | AP01-038 | Mirror of A015-D3X-05 |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO right-angle angle connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A015-D3X-05



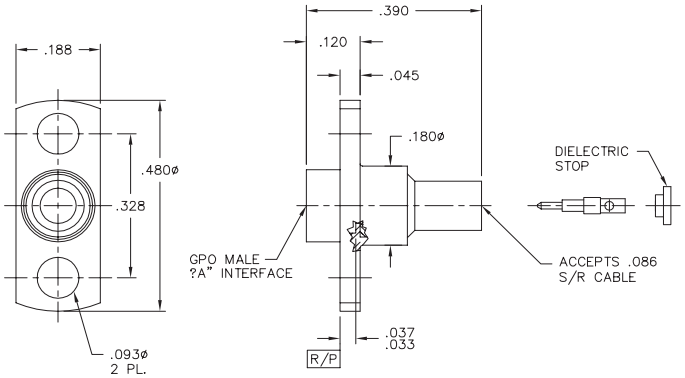
A015-D3X-05

# GPO® to .086 Cable Connectors

## Male Flange Mount to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-D8X-01[1] | A096-A99-03, A099-A99-04, L096-A99-01 | AP01-015 | Flange diameter Ø.480<br>Flange width .188<br>Hole spacing .328<br>Hole size Ø.093 |
| A001-D8X-02[1] | A096-A99-03, A099-A99-04, L096-A99-01 | AP01-015 | Flange diameter Ø.400<br>Flange width .188<br>Hole spacing .282<br>Hole size Ø.073 |
| A014-D8X-03[1] | A096-A99-03, A096-A99-04, OSI Model No. T-4567 | IS-7051-9 | Flange height .403<br>Flange width .188<br>Hole size Ø.093 |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO® male flange connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



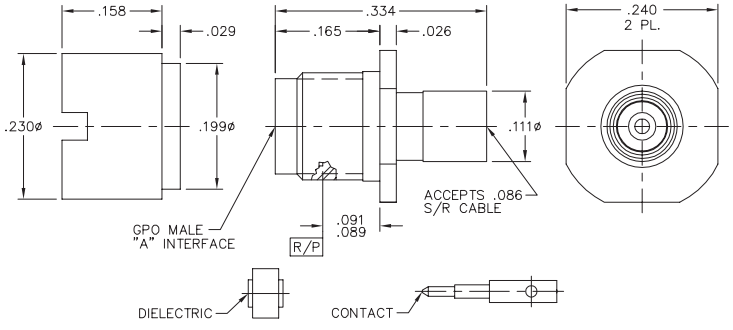

A001-D8X-01

A001-D8X-01

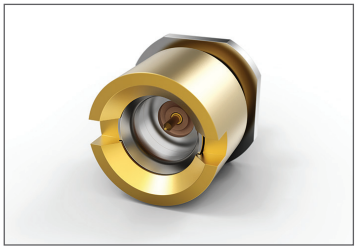
## Male Bulkhead to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A016-D7X-03[1] | 9001-932-3, A096-A99-02, A096-A99-03, L096-A99-01 | AP01-123 | |
| A016-D8X-01[1] | A096-A99-02, A096-A99-03, OSI Model No. T-4567 | AP01-050 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO male bulkhead connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A016-D7X-03



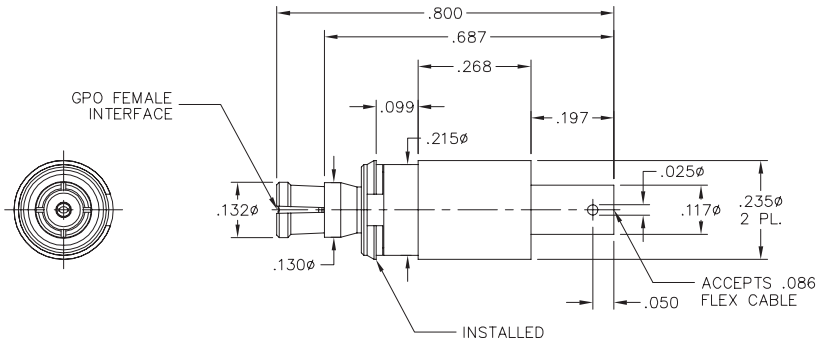
A016-D7X-03

# GPO® to .086 Cable Connectors

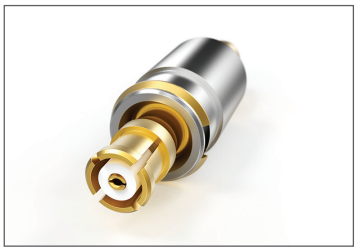
## Female Snap-In to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-D11-06 | A096-A99-02, A096-A99-06, L096-A99-01, L096-A99-04, 9001-984-0, 9160-107-3 | - | |
| A018-D11-01 | A096-A99-02, A096-A99-06, L096-A99-01, L096-A99-04, 9001-984-0, 9160-107-3 | IS-7504-1 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO® female snap-in connectors are available.




A014-D11-06

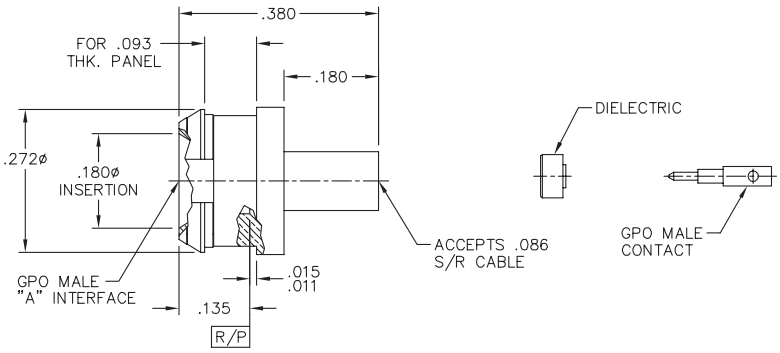


A014-D11-06

## Male Snap-In to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A016-D5X-01[1] | A096-A99-03, L096-A99-01, L096-A99-04 | AP01-087 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPO male snap-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A016-D5X-01

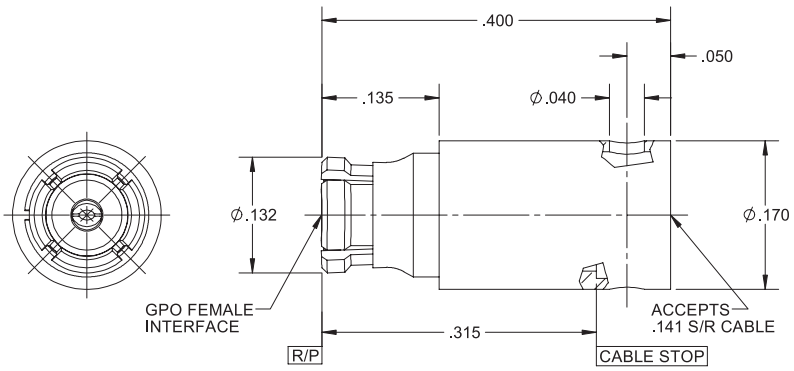
A016-D5X-01

# GPO® to .141 Cable Connectors

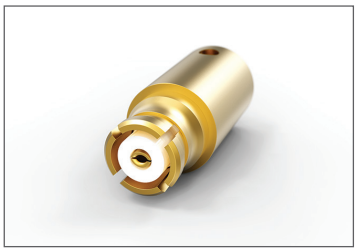
## Female Straight to .141 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-R11-01 | L096-A99-05, T-4700-1, A096-A99-06 | IS-7481-1 | |

*Flex cable can be substituted in place of .141 semi-rigid.
**Additional cable options for GPO® female straight connectors are available.




A014-R11-01

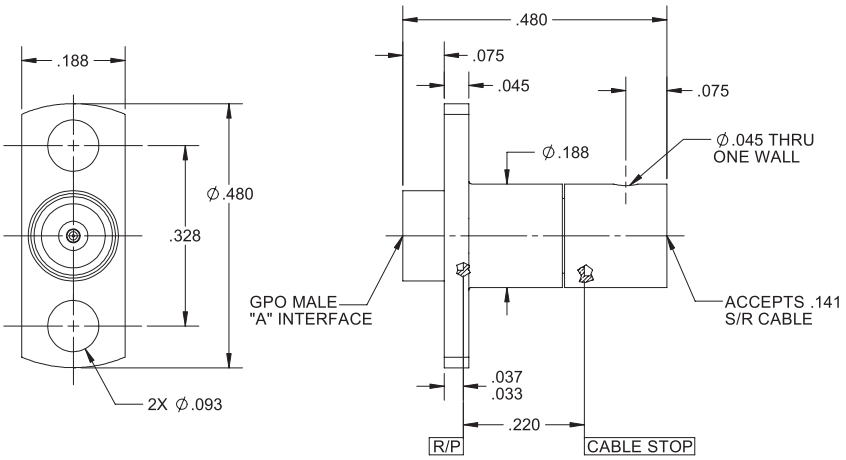


A014-R11-01

## Male Flange Mount to .141 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-R3X-01[1] | - | - | |

*Flex cable can be substituted in place of .141 semi-rigid.
**Additional cable options for GPO male flange connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A014-R3X-01

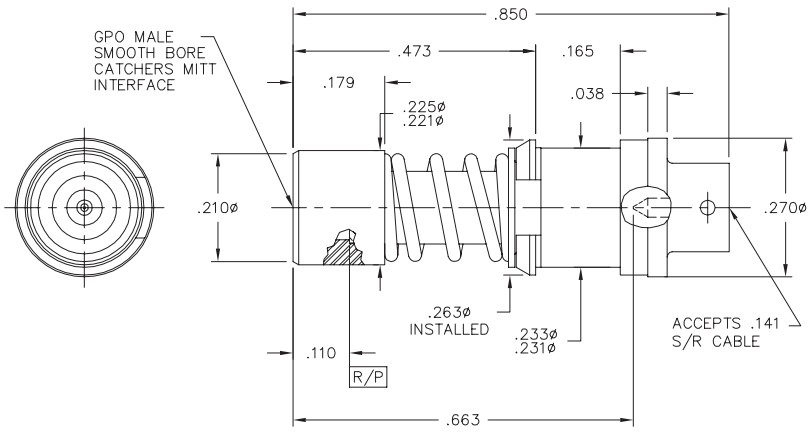
A014-R3X-01

# GPO® to .141 Cable Connectors

## Male Snap-In to .141 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A018-R96-01 | - | AP01-151 | |

*Flex cable can be substituted in place of .141 semi-rigid.
**Additional cable options for GPO® male snap-in connectors are available.




A018-R96-01

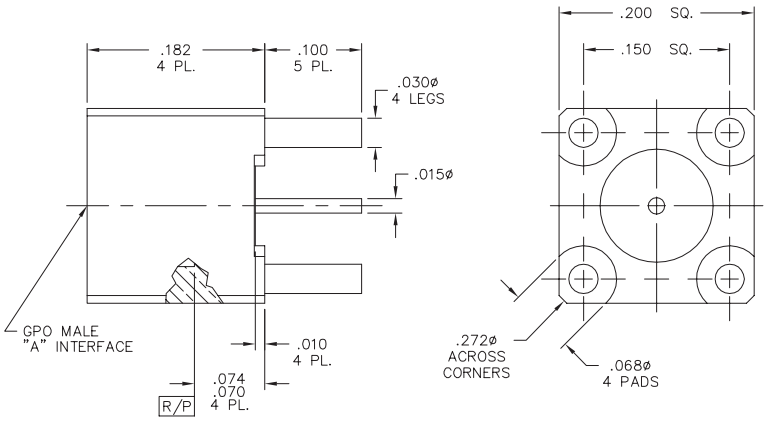
A018-R96-01

# GPO® Vertical Launch PCB Mounts

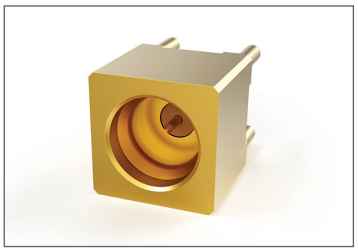
## Male Straight to PCB, Square Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A008-L1X-01[1] | - | - | .140 leg length |
| A008-L1X-03[1] | - | - | .100 leg length |

*Additional leg length, body styles, and packaging options for GPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A008-L1X-03

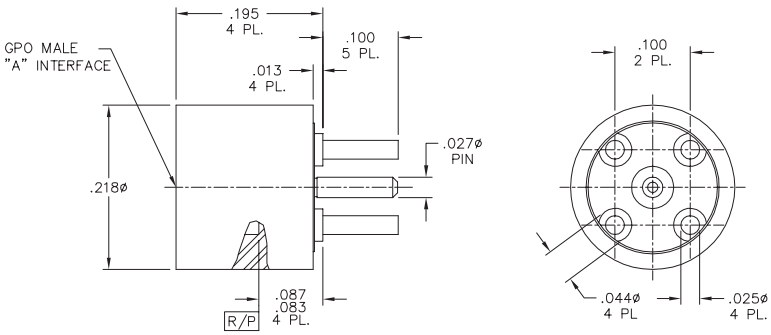


A008-L1X-03

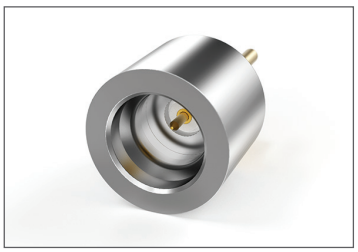
## Male Straight to PCB, Round Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A008-L3X-01[1] | - | - | .100 leg length |
| A008-L3X-01-T[1] | - | - | .100 leg length, solder dipped |
| A008-L3X-01-T @T13[1] | - | - | .100 leg length, solder dipped, on tape and reel |
| A008-L3X-02[1] | - | - | .140 leg length |
| A008-L3X-02-T[1] | - | - | .140 leg length, solder dipped |
| A008-L3X-08[1] | - | - | .065 leg length |
| A008-L3X-13-TAB-T[1] | - | - | .025, .050, .075, .100, .125 leg length, solder dipped |

*Additional leg length, body styles, and packaging options for GPO male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A008-L3X-01



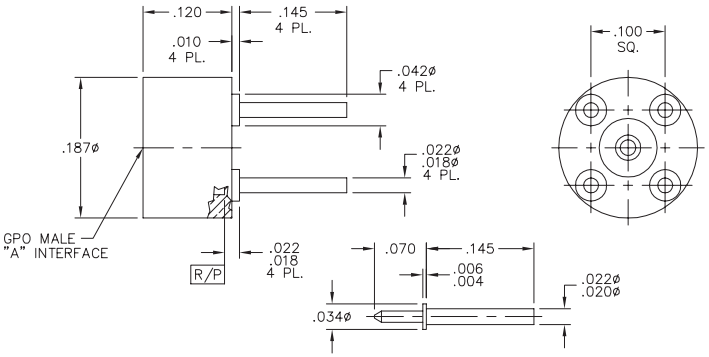
A008-L3X-01

# GPO® Vertical Launch PCB Mounts

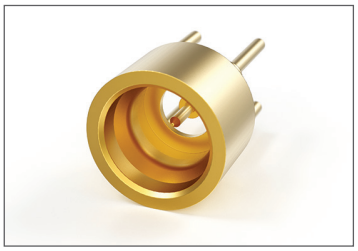
## Male Straight to PCB, Separate Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A008-L3X-05[1] | - | - | .145 leg length |
| A008-L3X-05-T[1] | - | - | .145 leg length, solder dipped |
| A008-L9X-10-TAB[1] | - | - | .100, .125, .150, .175 leg length, alignment plug |

*Additional leg length, body styles, and packaging options for GPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A008-L3X-05

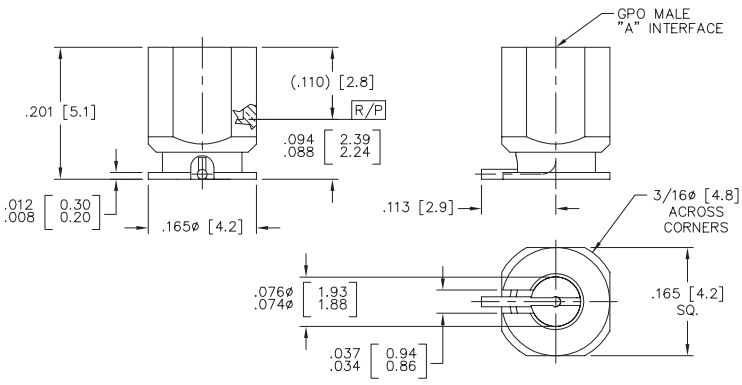


A008-L3X-05

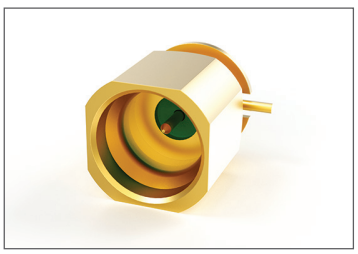
## Male Straight to PCB, Right-Angle (R/A) Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A012-P9X-01[1] | - | - | No legs |
| A012-P9X-01-T[1] | - | - | No legs, solder dipped |
| A012-P9X-01-T @ T13[1] | - | - | No legs, solder dipped, on tape and reel |
| A012-P9X-02[1] | - | - | No legs |
| A012-P9X-04[1] | - | - | .140 leg length |
| A012-P9X-04-T[1] | - | - | .140 leg length, solder dipped |
| A012-P9X-04-T @ T13[1] | - | - | .140 leg length, solder dipped, on tape and reel |

*Additional leg length, body styles, and packaging options for GPO male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A012-P9X-01



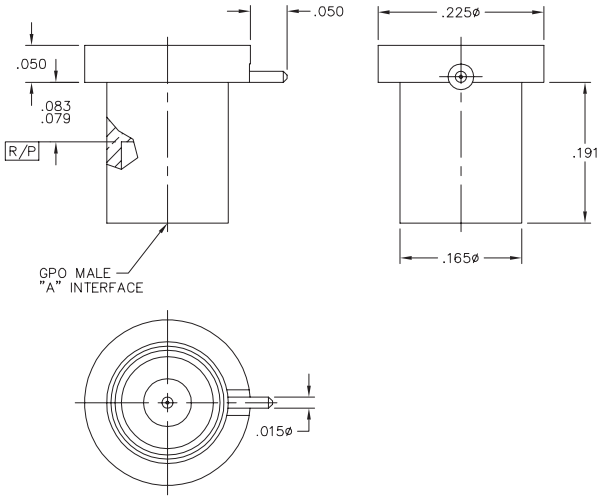
A012-P9X-01

# GPO® Vertical Launch PCB Mounts

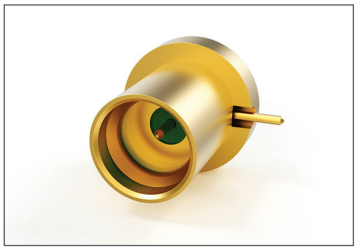
## Male Straight to PCB, Right-Angle (R/A) Center Conductor (C/C) Reverse Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A012-P9X-12[1] | - | - | Reverse mount through board |
| A012-P9X-12-T[1] | - | - | Reverse mount through board, solder dipped |

*Additional leg length, body styles, and packaging options for GPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A012-P9X-12

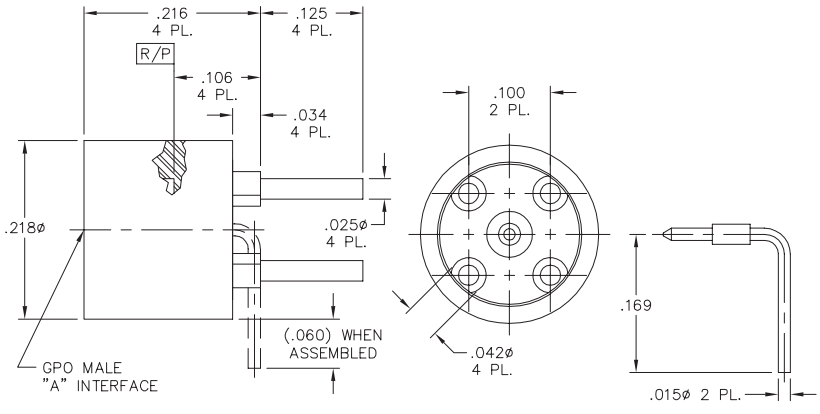


A012-P9X-12

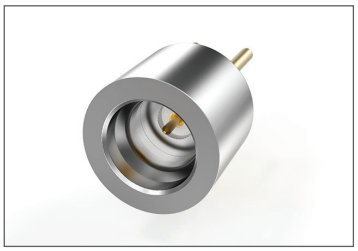
## Male Straight to PCB, Separate Right-Angle (R/A) Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A008-T1X-01-T[1] | - | - | .020 leg length (two legs), solder dipped, alignment plug |
| A008-P3X-01[1] | - | - | .125 leg length |
| A008-P3X-01-T[1] | - | - | .125 leg length, solder dipped |

*Additional leg length, body styles, and packaging options for GPO male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A008-P3X-01



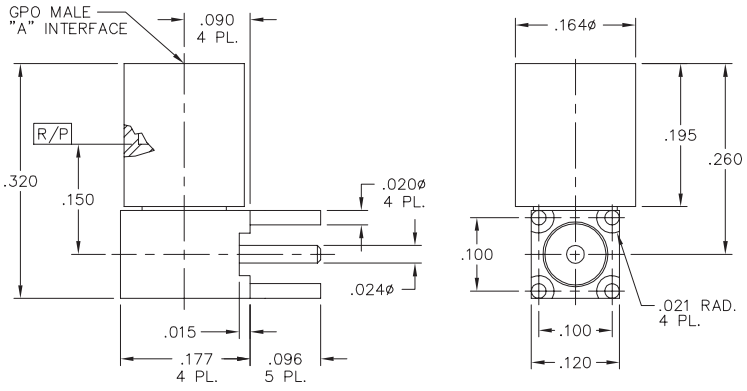
A008-P3X-01

# GPO® Right-Angle PCB Mounts

## Male Right-Angle to PCB

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A009-P3X-01[1] | - | - | .096 leg length |
| A009-P3X-01-T[1] | - | - | .096 leg length, solder dipped |
| A009-P3X-01-T @ T13[1] | - | - | .096 leg length, solder dipped, on tape and reel |
| A009-P3X-03[1] | - | - | .140 leg length |
| A009-P3X-03-T[1] | - | - | .140 leg length, solder dipped |
| A009-P3X-03-T @ T13[1] | - | - | .140 leg length, solder dipped, on tape and reel |
| A009-P9X-12-TAB-T[1] | - | - | .025, .050, .075, .100, .125 leg length, solder dipped |

*Additional leg length, body styles, and packaging options for GPO® male right-angle angle to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



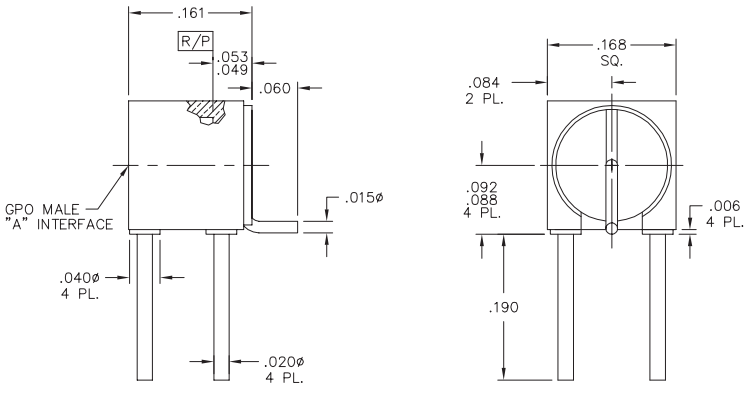

A009-P3X-01

A009-P3X-01

## Male Right-Angle Z-Pin to PCB

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A009-P9X-01[1] | - | - | .190 leg length |
| A009-P9X-03[1] | - | - | .150 leg length |

*Additional leg length, body styles, and packaging options for GPO male right-angle to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A009-P9X-01

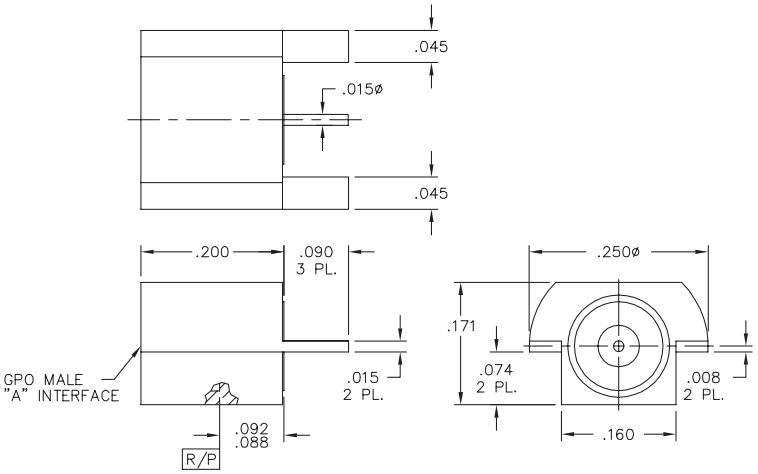
A009-P9X-01

# GPO® Edge Mounts

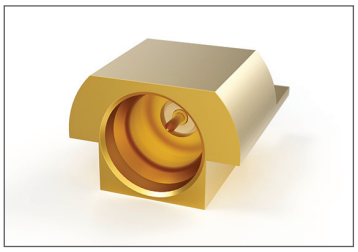
## Male Edge Flush Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A010-L1X-02[1] | - | - | |
| A010-L1X-02-T[1] | - | - | Solder dipped |
| A010-L1X-02-T @ T13[1] | - | - | Solder dipped, on tape and reel |
| A010-L16-08 | - | - | |
| A010-L16-08-T | - | - | Solder dipped |

*Additional body styles and packaging options for GPO® male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A010-L1X-02

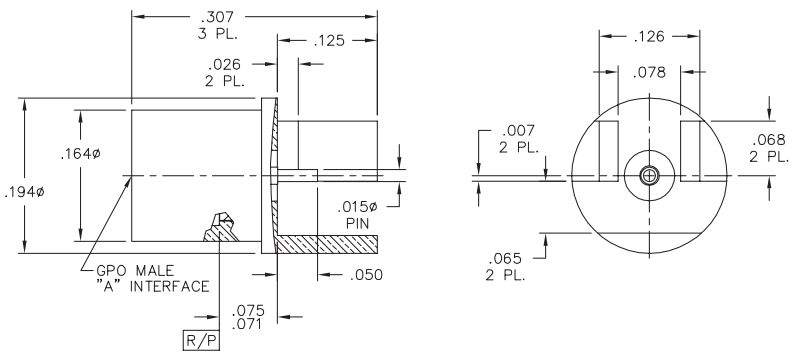


A010-L1X-02

## Male Edge Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A010-L3X-02[1] | - | - | |

*Additional body styles and packaging options for GPO male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A010-L3X-02

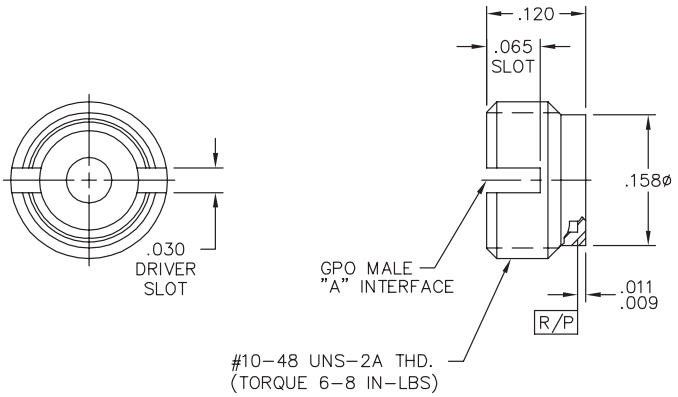
A010-L3X-02

# GPO® Thread-In Shrouds

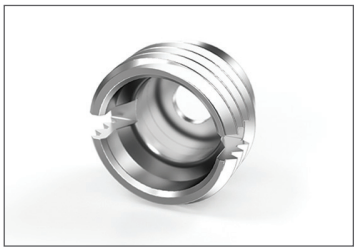
## Male Thread-In Shroud (No Pin)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A003-A2X-01[1] | L091-A99-01, L091-A99-02, A090-A99-01, A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB) | AP01-024 | |

*Additional body styles and packaging options for GPO® thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A003-A2X-01

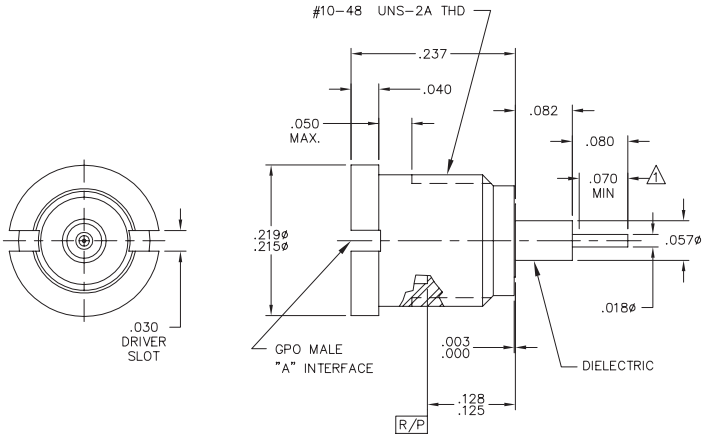


A003-A2X-01

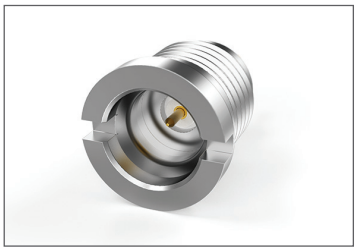
## Male Thread-In Shroud (With Pin)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A003-L3X-01[1] | A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB) | - | .080 pin length |
| A003-L3X-02[1] | L091-A99-01, L091-A99-02, A090-A99-01, A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB) | - | .065 pin length |
| A007-L43-14 | - | - | .100 pin length, hermetic |
| A003-L9X-02[1] | L091-A99-01, L091-A99-02, A090-A99-01, A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB) | - | .057 pin length |
| A003-L36-14-TAB | L091-A99-01, L091-A99-02, A090-A99-03 | AP01-057 | .070, .100, .200, .350 pin length |

*Additional body styles and packaging options for GPO thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A003-L3X-01



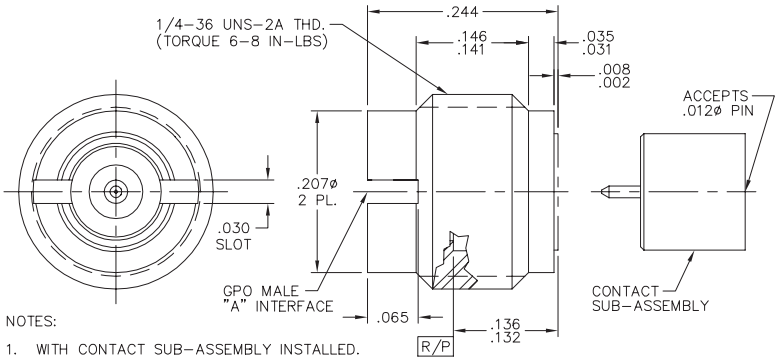
A003-L3X-01

# GPO® Thread-In Shrouds

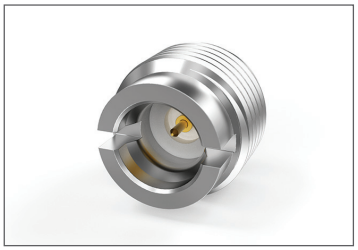
## Male Thread-In Shroud (Accepts Pin Subassembly)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A003-N3X-01[1] | A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB), A097-A99-07 | AP01-104 | Accepts Ø.012 pin subassembly |
| A003-N3X-02[1] | A097-A99-01 (FD), A097-A99-02 (LD), A097-A99-03 (SB), A097-A99-07 | AP01-104 | Accepts Ø.012 pin subassembly |

*Additional body styles and packaging options for GPO® thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A003-N3X-01



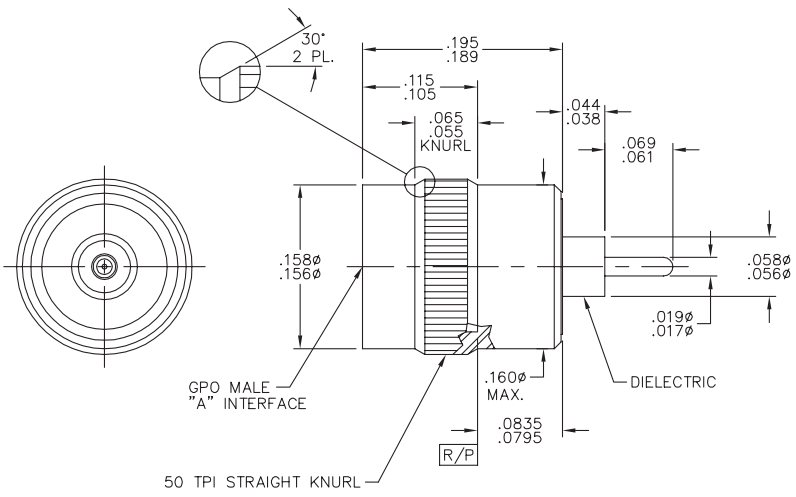
A003-N3X-01

# GPO Press-In Shrouds

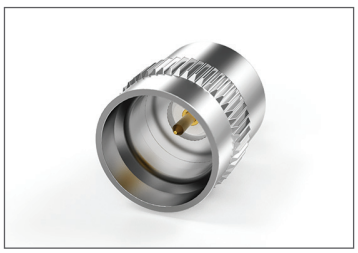
## Male Press-In Shroud

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A005-L3X-01[1] | A090-A99-08 | AP01-070 | |

*Additional body styles and packaging options for GPO press-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A005-L3X-01



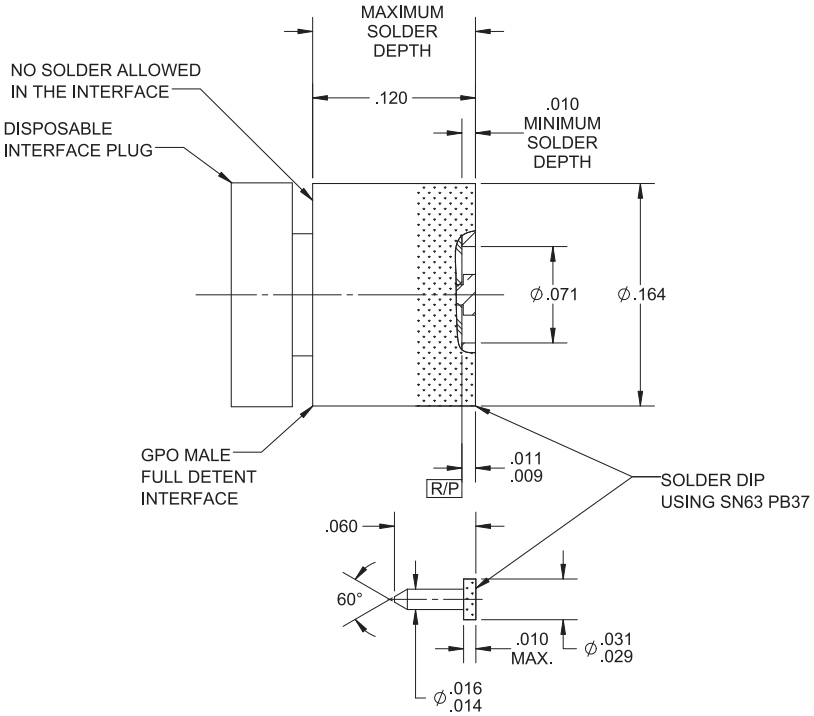
A005-L3X-01

# GPO® Solder-On Shrouds

## Male Solder-On Shroud with Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A012-T95-01 | - | - | Accepts Ø.015 pin (included), alignment plug |
| A012-T93-02-T | - | - | Accepts Ø.015 pin (included), solder dipped, alignment plug |
| A012-L9X-04-T[1] | - | - | Accepts Ø.015 pin (included), solder dipped, alignment plug |

*Additional body styles and packaging options for GPO® shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A012-T93-02-T

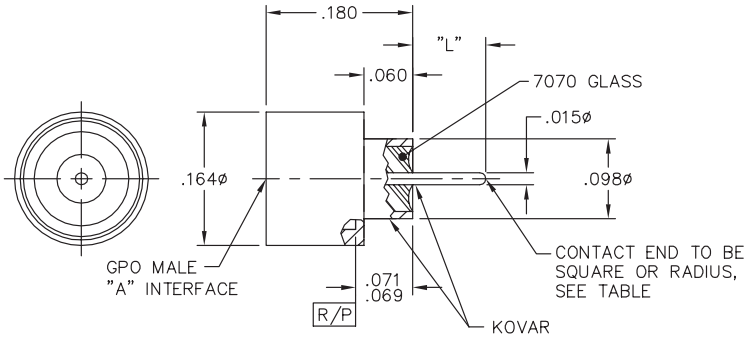
A012-T93-02-T

# GPO® Hermetic Shrouds

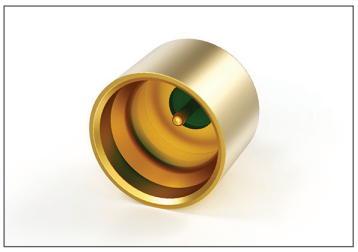
## Male Hermetic Shroud (Full Shroud)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A007-L4X-01-TAB-R[1] | - | - | Radius pin, pin lengths of .030 to .145-in .005 increments, full body |
| A007-L4X-01-TAB-S[1] | - | - | Square pin, pin lengths of .030 to .145-in .005 increments, full body |
| A007-L4X-03-TAB-R[1] | - | - | Radius pin, pin lengths of .030 to .145-in .005 increments, short body |
| A007-L4X-04-TAB-R[1] | - | - | Radius pin, pin lengths of .030 to .145-in .005 increments, short body |
| A007-L4X-04-TAB-S[1] | - | - | Square pin, pin lengths of .030 to .145-in .005 increments, short body |
| A012-T4X-01[1] | - | - | Low-temperature ceramics |

*Additional body styles and packaging options for GPO® shroud connectors are available.
**Full body equals standard interface dimensions and short body equals a compressed/shorter interface.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A007-L4X-01-TAB-R

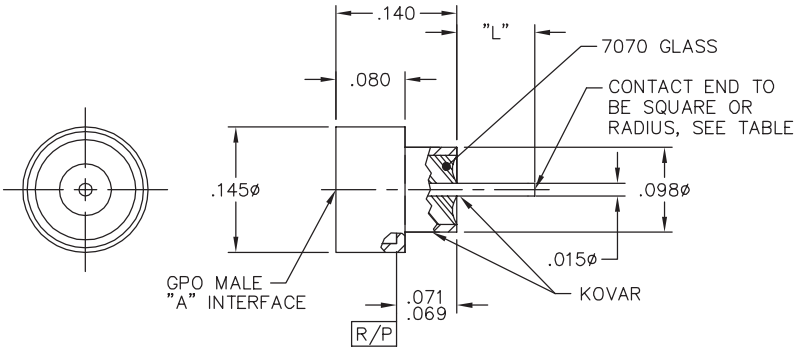


A007-L4X-01-TAB-R

## Male Hermetic Shroud (Half Shroud)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A007-L4X-02-TAB-R[1] | - | - | Radius pin, pin lengths of .030 to .145-in .005 increments, full body |
| A007-L4X-02-TAB-S[1] | - | - | Square pin, pin lengths of .030 to .145-in .005 increments, full body |

*Additional body styles and packaging options for GPO shroud connectors are available.
**Full body equals standard interface dimensions and short body equals a compressed/shorter interface.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A007-L4X-02-TAB-S

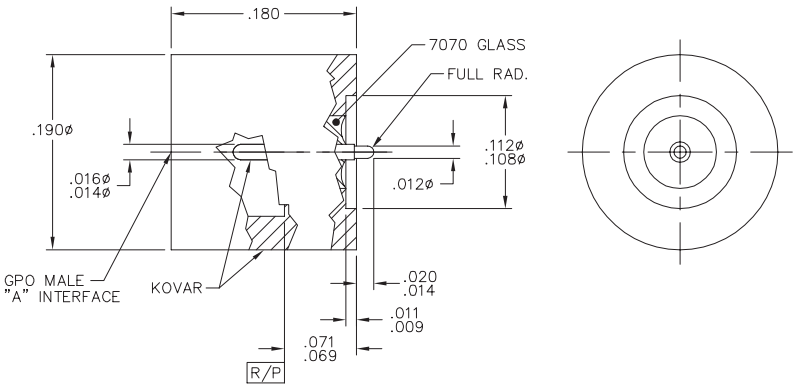
A007-L4X-02-TAB-S

# GPO® Hermetic Shrouds

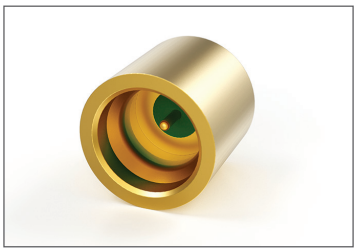
## Male Hermetic Shroud

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A007-L4X-31[1] | - | - | |
| A007-L4X-31-T[1] | - | - | Solder dipped |
| A007-L4X-09[1] | - | - | |
| A007-L4X-10-T[1] | - | - | Solder dipped |

*Additional body styles and packaging options for GPO® shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A007-L4X-31



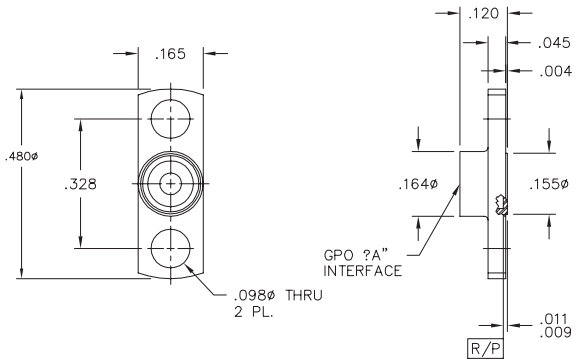
A007-L4X-31

# GPO® Flange Mounts

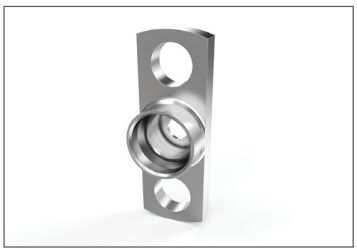
## Male Flange Mount (Two-Hole, No Center Conductor)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-A2X-03[1] | A090-A99-11, A090-A99-03 | AP01-009 | Flange diameter Ø.480<br>Flange width .165<br>Hole spacing .328<br>Hole size Ø.098 |
| A001-A2X-04[1] | A090-A99-10, A090-A99-03 | AP01-009 | Flange diameter Ø.400<br>Flange width .165<br>Hole spacing .282<br>Hole size Ø.073 |
| A001-A2X-07[1] | A090-A99-09, A090-A99-03 | AP01-009 | Flange diameter Ø.625<br>Flange width .165<br>Hole spacing .481<br>Hole size Ø.103 |

*Additional body styles and packaging options for GPO® flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A001-A2X-03

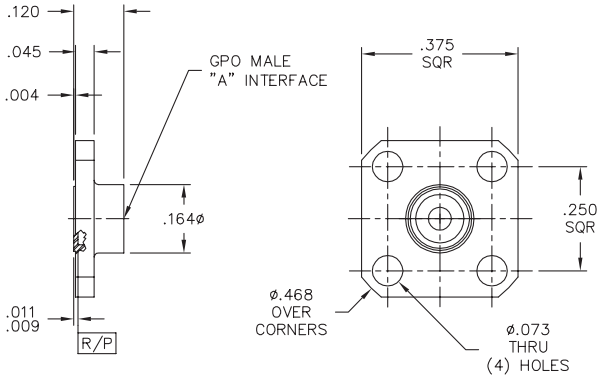


A001-A2X-03

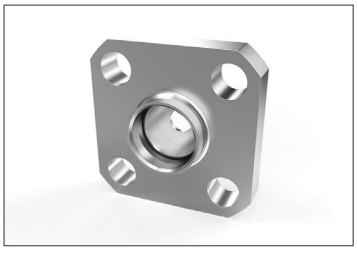
## Male Flange Mount (Four-Hole, No Center Conductor)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-A2X-12[1] | - | - | Flange height .375 square<br>Hole spacing .250 square<br>Hole size Ø.073 |

*Additional body styles and packaging options for GPO flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A001-A2X-12



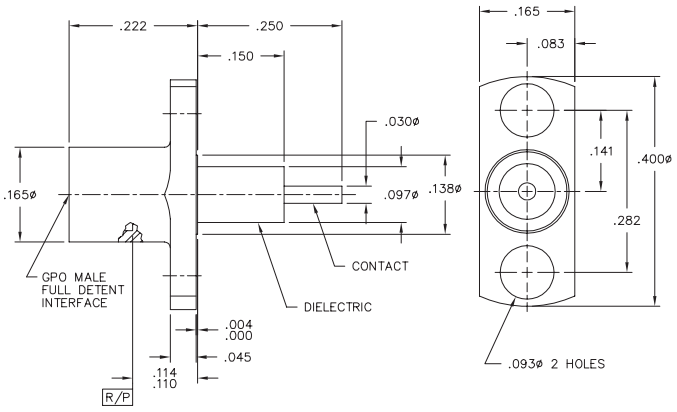
A001-A2X-12

# GPO® Flange Mounts

## Male Flange Mount (Two-Hole, Center Conductor Installed)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-L33-03 | - | - | Flange diameter Ø.400<br>Flange width .165<br>Hole spacing .282<br>Hole size Ø.093<br>.100 pin length |

*Additional body styles and packaging options for GPO® flange-mount connectors are available.



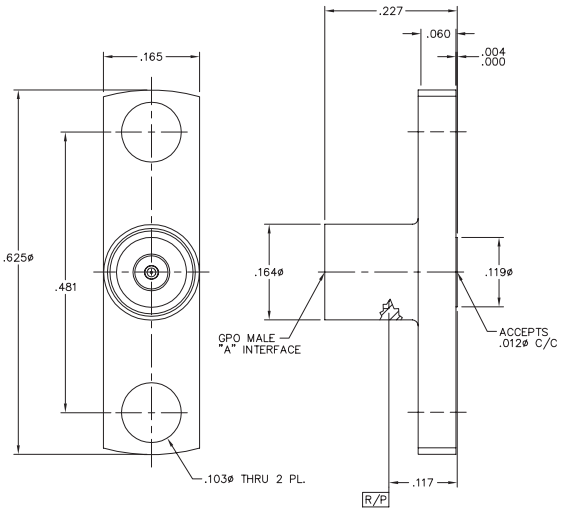

A001-L33-03

A001-L33-03

## Male Flange Mount (Two-Hole, Accepts Ø.012 Center Conductor)

| - | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A001-N3X-05[1] | A090-A99-09 | - | Flange diameter Ø.625<br>Flange width .165<br>Hole spacing .481<br>Hole size Ø.103 |

*Additional body styles and packaging options for GPO flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A001-N3X-05

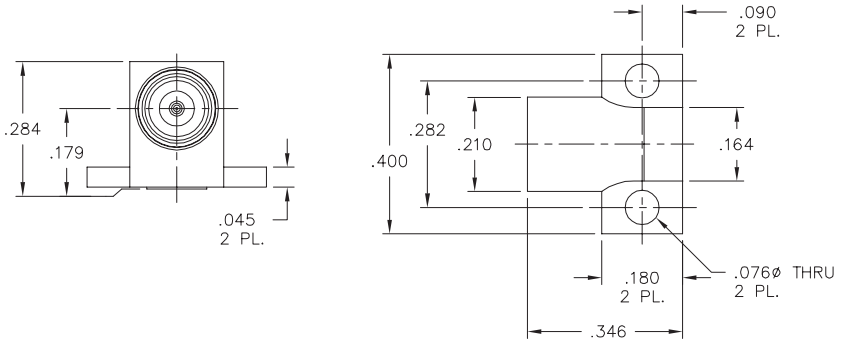
A001-N3X-05

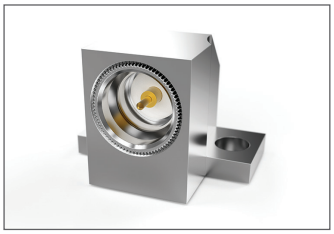
# GPO® Flange Mounts

## Male Flange Mount (Two-Hole, Right-Angle (R/A) Interface)

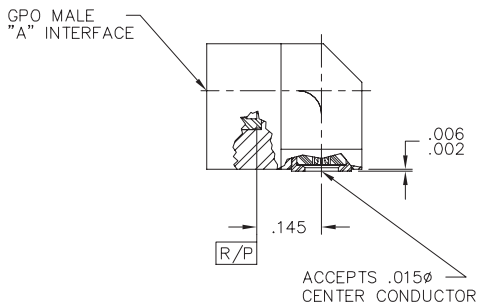
| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A002-N3X-01[1] | - | - | Accepts Ø.015 center conductor |

*Additional body styles and packaging options for GPO® flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



A002-N3X-01



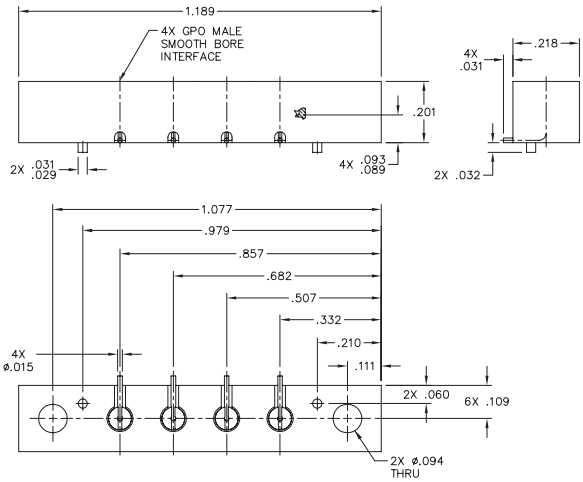

A002-N3X-01

# GPO® Multiposition Blocks

## Male Four-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A036-P95-04 | - | - | .175 interface pitch, R/A pin |
| A036-P95-04-T | - | - | .175 interface pitch, R/A pin, solder dipped |

*Additional body styles and packaging options for GPO® multiposition blocks are available.



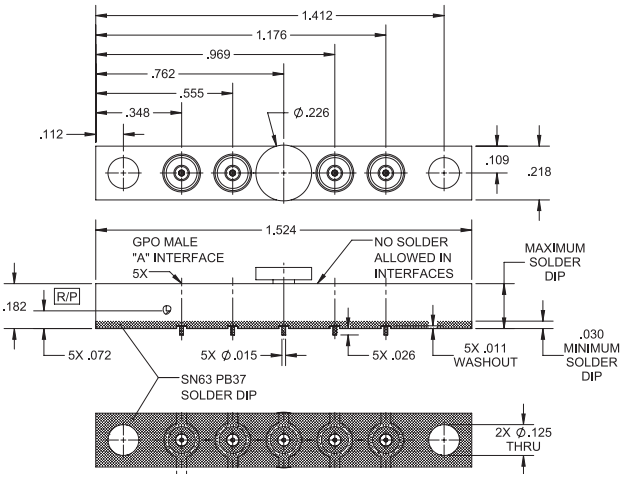

A036-P95-04

A036-P95-04

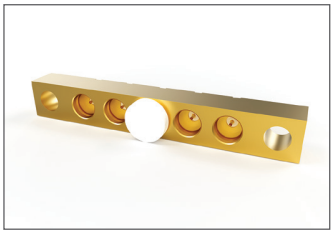
## Male Five-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A032-L1X-01-T[1] | - | - | .207 interface pitch, straight pin, solder dipped<br>Plug is for pick and place |
| A036-T45-01 | - | - | .170 interface pitch, straight pin |

*Additional body styles and packaging options for GPO multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A032-L1X-01-T



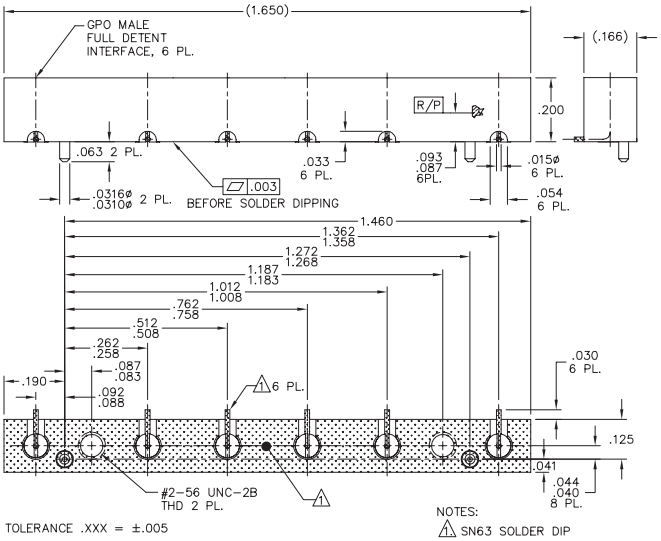
A032-L1X-01-T

# GPO® Multiposition Blocks

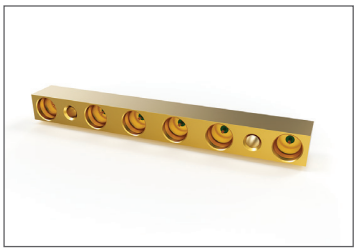
## Male Six-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A036-P93-02-T | - | - | .250 interface pitch, R/A pin, solder dipped |

*Additional body styles and packaging options for GPO® multiposition blocks are available.




A036-P93-02-T

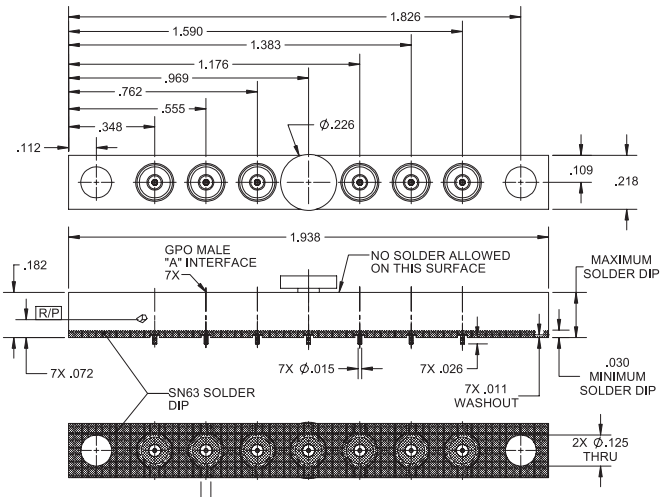


A036-P93-02-T

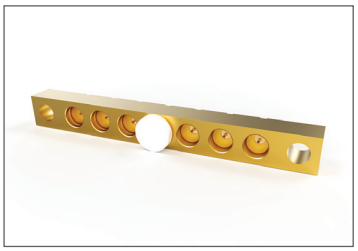
## Male Seven-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A032-L9X-027-T[1] | - | - | .207 interface pitch, straight pin, solder dipped<br>Plug is for pick and place |

*Additional body styles and packaging options for GPO multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A032-L9X-027-T



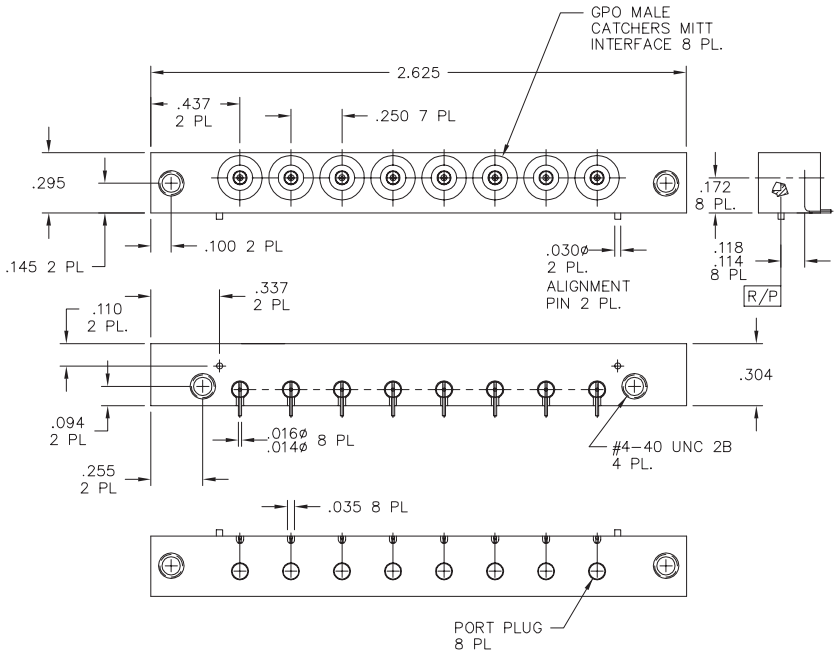
A032-L9X-027-T

# GPO® Multiposition Blocks

## Male Eight-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A036-P76-01 | - | - | .250 interface pitch, Z-pin |
| A036-P76-02 | - | - | .250 interface pitch, Z-pin |
| A030-N93-02-T | - | - | .300 interface pitch, R/A pin, solder dipped |

*Additional body styles and packaging options for GPO® multiposition blocks are available.




A036-P76-01

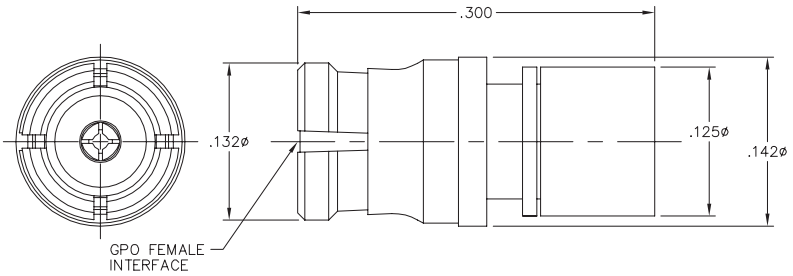
A036-P76-01

# GPO® Accessories

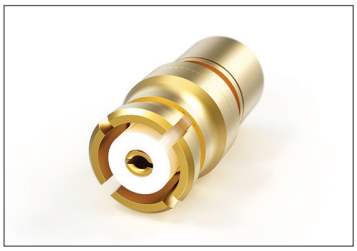
## Female 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A055-A11-01 | - | - | Test-grade load |
| A055-A11-02 | - | - | Field-grade load |
| A055-A11-05 | - | - | Snap-in float mount |
| A055-A11-08 | - | - | |
| A055-A91-02 | - | - | Snap-in float mount |

*Additional body styles and packaging options for GPO® accessories are available.




A055-A11-01

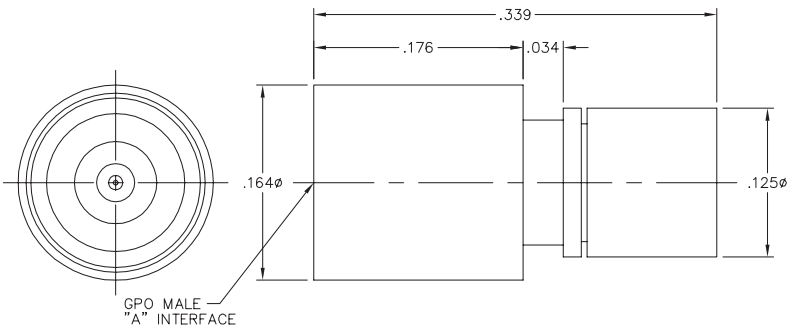


A055-A11-01

## Male 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A055-A1X-01[1] | - | - | Test-grade load |
| A055-A1X-02[1] | - | - | Field-grade load |

*Additional body styles and packaging options for GPO accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




A055-A1X-01

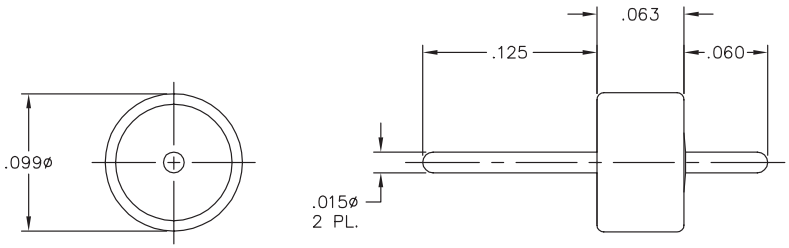
A055-A1X-01

# GPO® Accessories

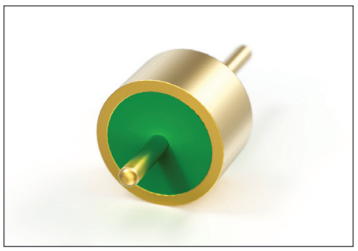
## 50 Ohm Hermetic Seal

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y007-L42-02 | - | - | .125 pin length |
| Y007-L42-03 | - | - | .050 pin length |
| Y007-L42-04 | - | - | .200 pin length |

*Additional body styles and packaging options for GPO® accessories are available.




Y007-L42-02

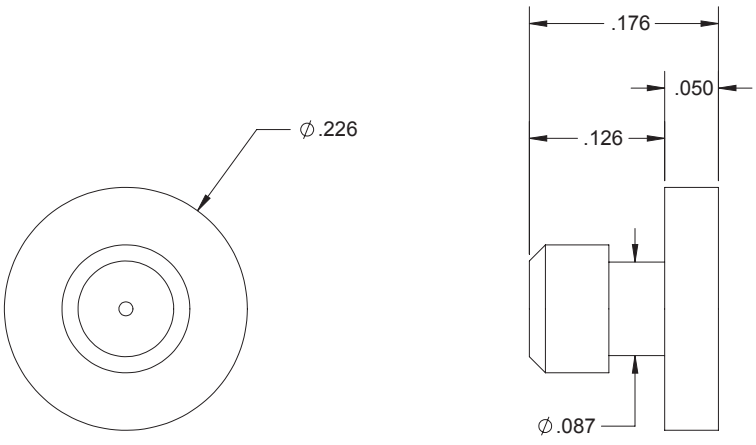


Y007-L42-02

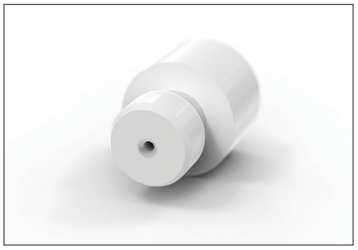
## Interface Plug (Alignment Plug)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y072-A0X-07[1] | - | - | |

*Additional body styles and packaging options for GPO accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




Y072-A0X-07



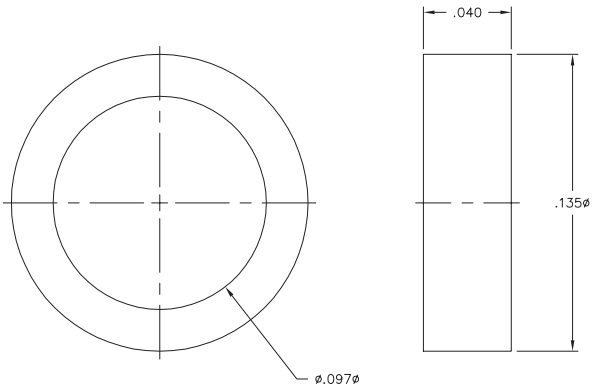
Y072-A0X-07

# GPO® Accessories

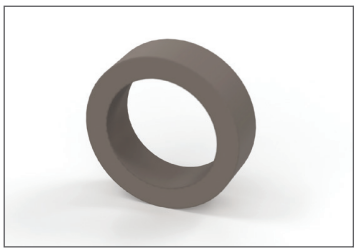
## EMI Shield Ring

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y099-A99-13 | - | - | Gasket may reduce radial misalignment tolerance of the interconnect |

*Additional body styles and packaging options for GPO® accessories are available.



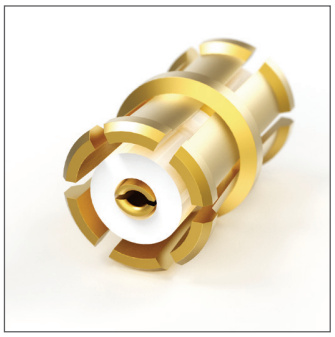

Y099-A99-13



Y099-A99-13

# GPPO® Products

- Center-to-center spacing of 0.140-in available for increased package density
- Frequency from DC to 65 GHz
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change
- Adapters available to SMA 2.4 mm and 1.85 mm



# GPPO® Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | 50 Ohms nominal |
| **Frequency range** | DC to 65 GHz |
| **Temperature range** | -65°C to 165°C |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | 1.10: 1 to 26.5 GHz typical; 130: 1 typical to 50 GHz |
| **Insertion loss** | .04 √f (GHz) |
| **DWV @ sea level** | 325 $V_{rms}$ |
| **Insulation resistance** | 5,000 megohms minimum |
| **Contact resistance** | |
| **Outer conductor** | 2 milliohms maximum |
| **Inner conductor** | 6 milliohms maximum |
| **RF leakage** | -80 dB (typical mated pair) |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | Full detent (FD) - 100 minimum; smooth bore - 500 minimum |
| **Force to engage/disengage** | FD - 4.5 lbs typical/6.5 lbs typical;<br>SB - 2.5 lbs typical/1.5 lbs typical |
| **Tolerated misalignment** | |
| **Radial** | +/-0.010 |
| **Axial** | 0.010 (flush to 0.010 from the reference plane) |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |
| **Springs** | 17-7 Stainless Steel per ASTM A313-95A |

## Finish (typical)

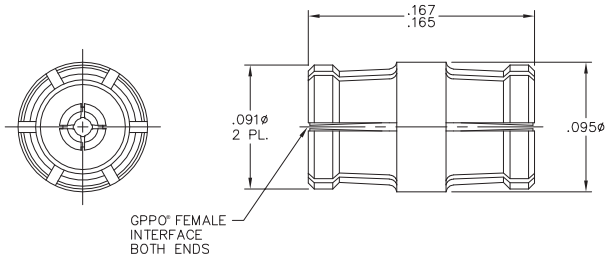
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |

# GPPO® Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) Connector – Standard

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| B1B1-0001-05 | .166 | B095-A99-01 | - | |
| B1B1-0001-25 | .596 | B095-A99-01 | - | |
| B1B1-0001-26 | 1.310 | B095-A99-01 | - | |

*Additional lengths available upon request.




B1B1-0001-05

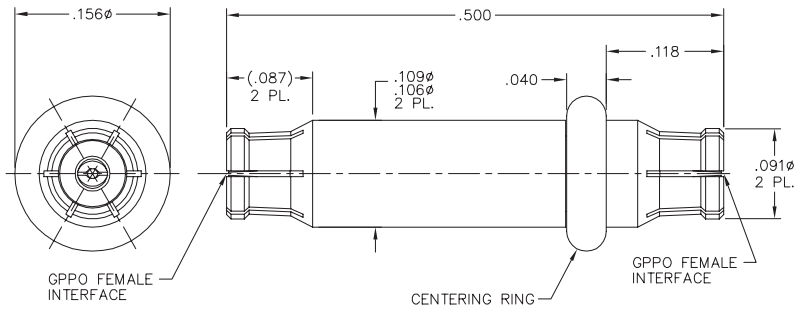
B1B1-0001-05

B1B1-0001-26

## Female Blind Mate Interconnect (Bullet) Connector – Alignment Features

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| B1B1-0009-04-0500 | .500 | B095-A99-01 | - | Silicone o-ring |
| B1B1-0009-05-0500 | .500 | B095-A99-01 | - | Acetal o-ring |

*O-rings and gaskets are for alignment only and are not to be used for shielding applications.




B1B1-0009-04-0500

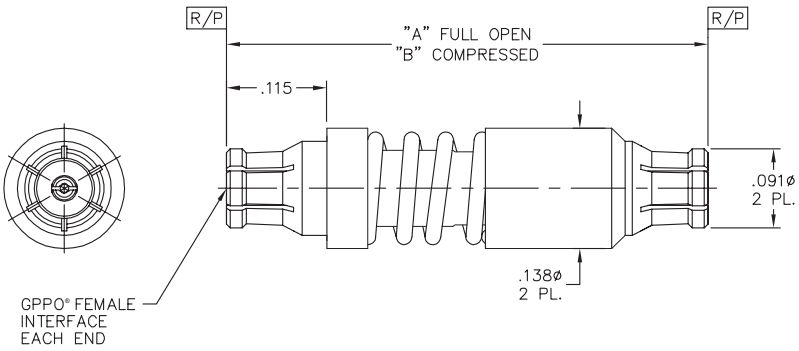
B1B1-0009-04-0500

# GPPO® Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) Connector – Spring Loaded/Self-Adjusting

| Catalog Number | Relaxed Length (inches) | Compressed Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|---|
| B1B1-0001-10 | .412 | .382 | B095-A99-01 | - | |
| B1B1-0001-38 | .412 | .382 | B095-A99-01 | - | Larger outer diameter than B1B1-0001-10 |
| B1B1-0001-39 | .424 | .394 | B095-A99-01 | - | |
| B1B1-0001-37 | .552 | .502 | B095-A99-01 | - | |
| B1B1-0001-11 | .646 | .591 | B095-A99-01 | - | |

*O-rings and gaskets are for alignment only and are not to be used for shielding applications.




B1B1-0001-37

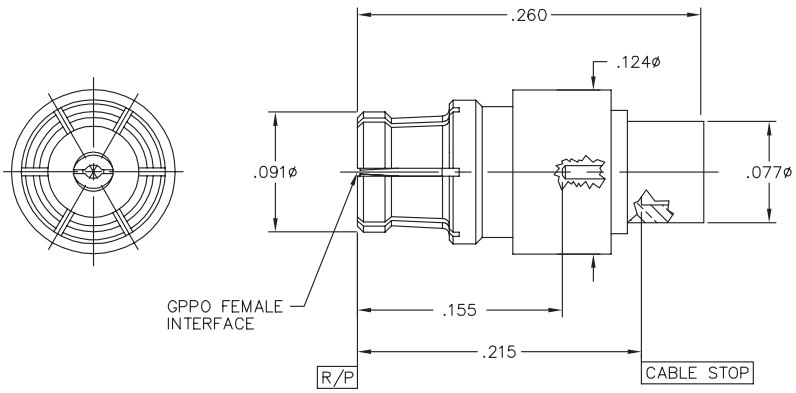
B1B1-0001-37

# GPPO® to .047 Cable Connectors

## Female Straight to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-B11-01 | B096-A93-01, A096-A99-04, L096-A99-02, B098-A99-03 | AP01-133 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPPO® female straight connectors are available.



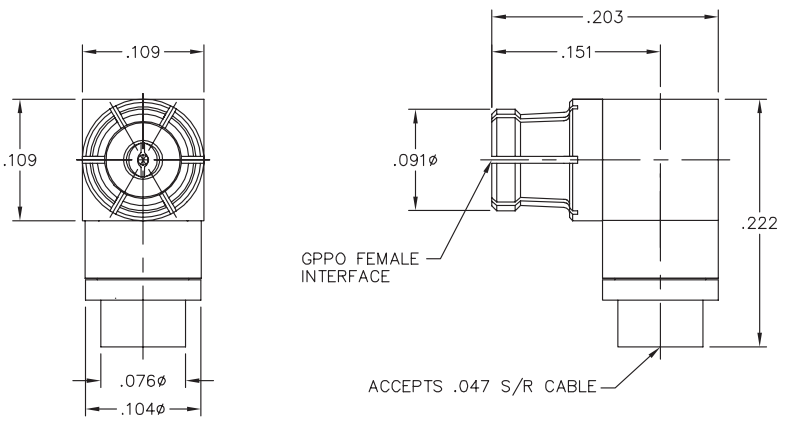

B014-B11-01

B014-B11-01

## Female Right-Angle (R/A) to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B015-B11-01 | B096-A93-01, A096-A99-09, L096-A99-02, B098-A99-07 | AP01-080 | |
| B015-B11-02 | B096-A93-01, A096-A99-10, L096-A99-02, B098-A99-07 | AP01-076 | Swept contact |
| B015-B11-04 | B096-A93-01, A096-A99-09, L096-A99-02, B098-A99-07 | AP01-150 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPPO female right-angle connectors are available.




B015-B11-02

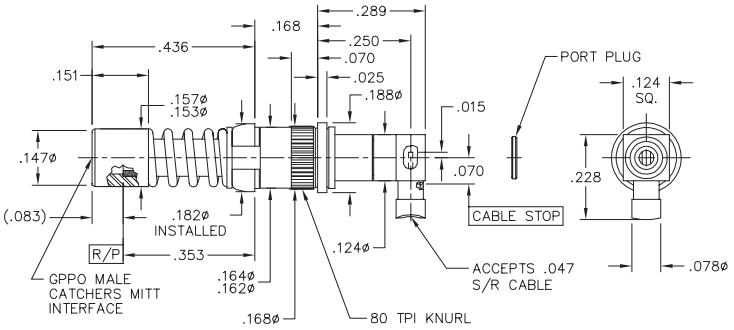
B015-B11-02

# GPPO® to .047 Cable Connectors

## Male Right-Angle (R/A) to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B019-B36-02 | 9001-823-0 | AP01-156 | Float mount |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO® male right-angle connectors are available.



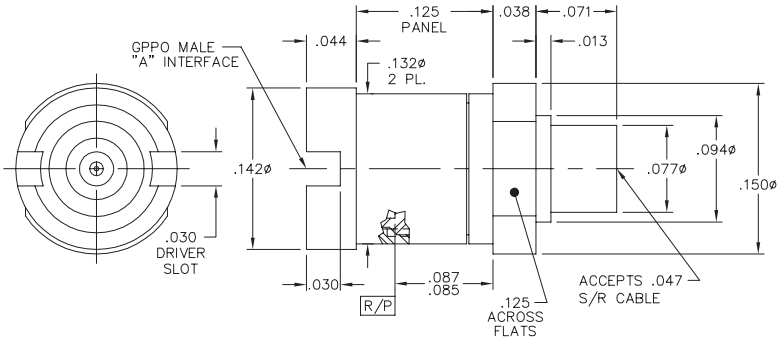

B019-B36-02

B019-B36-02

## Male Bulkhead to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-B3X-02[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-02, B097-A99-01 | AP01-110 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPPO male bulkhead connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B016-B3X-02

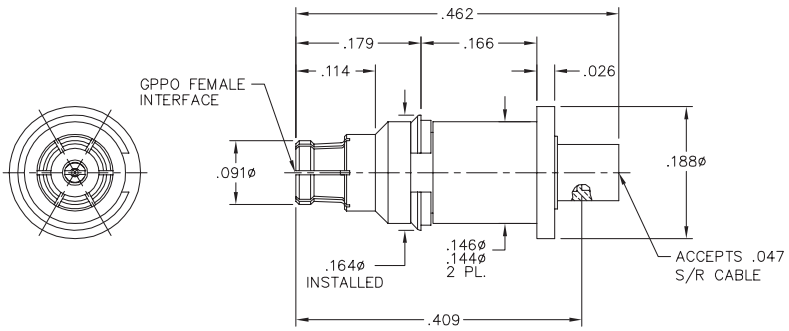
B016-B3X-02

# GPPO® to .047 Cable Connectors

## Female Snap-In to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-B11-01 | B096-A93-01, A096-A99-09, L096-A99-02, 9001-824-0 | AP01-103 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPPO® female snap-in connectors are available.



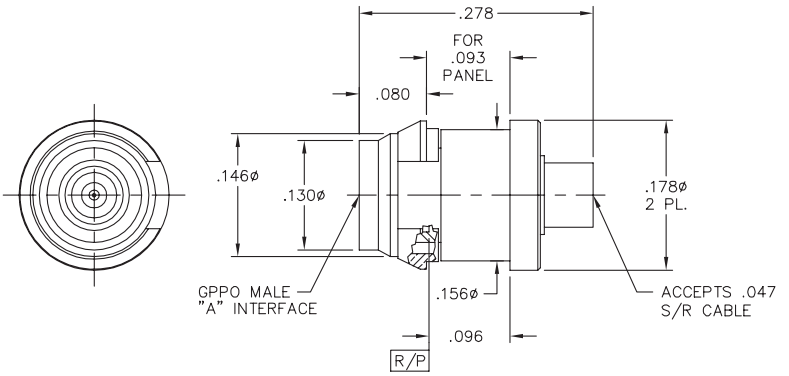

B016-B11-01

B016-B11-01

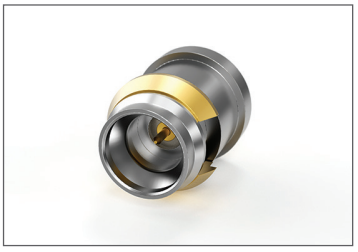
## Male Snap-In to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-B3X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-02, B098-A99-05 | AP01-094 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for GPPO male snap-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B016-B3X-01



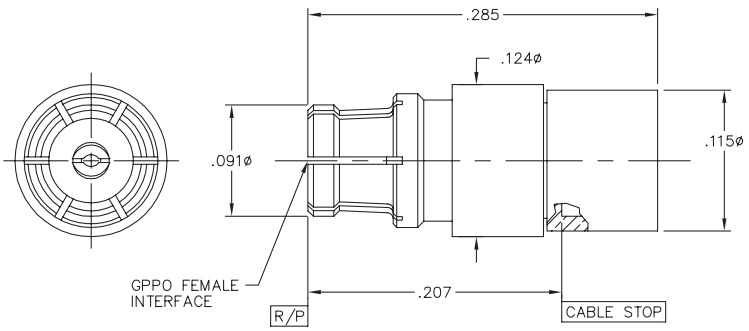
B016-B3X-01

# GPPO® to .086 Cable Connectors

## Female Straight to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-D11-01 | B096-A93-01, A096-A99-04, L096-A99-01, B098-A99-03 | AP01-148 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO® female straight connectors are available.



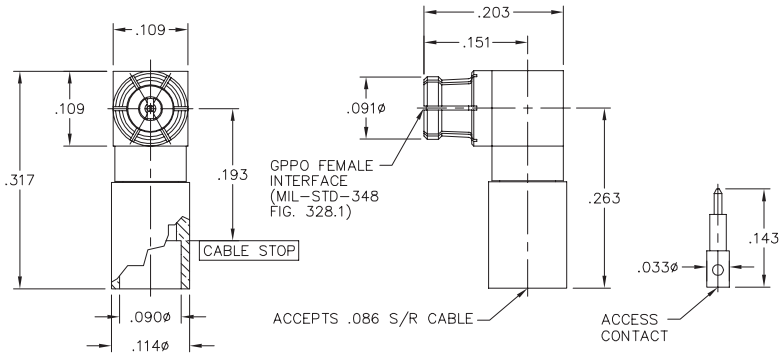

B014-D11-01

B014-D11-01

## Female Right-Angle (R/A) to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B015-D11-01 | B096-A93-01, A096-A99-10, L096-A99-01, B098-A99-07 | AP01-112 | Swept contact |
| B015-D11-02 | B096-A93-01, A096-A99-10, L096-A99-01, B098-A99-07 | - | |
| B015-D11-05 | B096-A93-01, A096-A99-10, L096-A99-01, B098-A99-07 | - | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO female right-angle connectors are available.




B015-D11-01

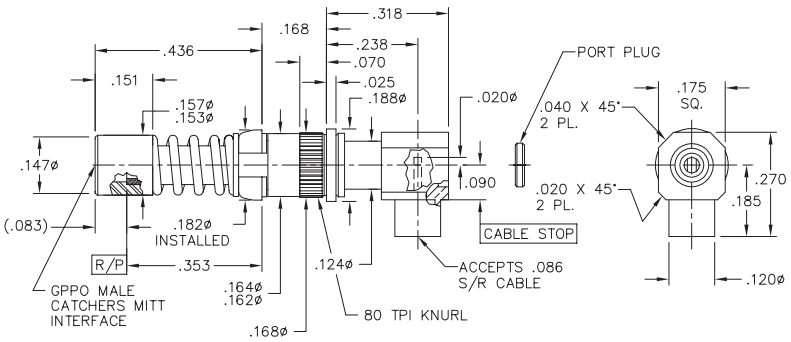
B015-D11-01

# GPPO® to .086 Cable Connectors

## Male Right-Angle (R/A) to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B019-D36-01 | 9001-823-0 | AP01-145 | Float mount |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO® male right-angle connectors are available.



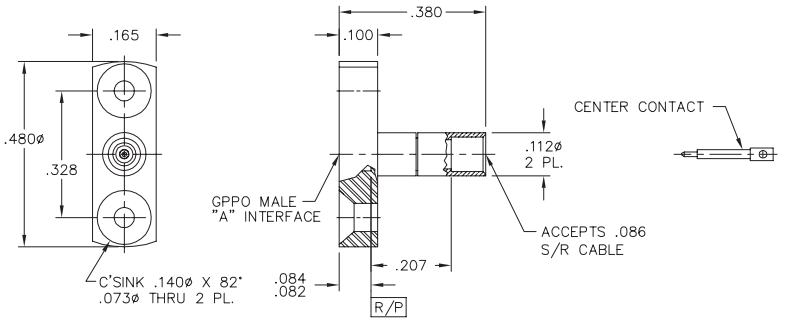

B019-D36-01

B019-D36-01

## Male Flange Mount to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B001-D3X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-01 | AP01-119 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO male flange connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B001-D3X-01

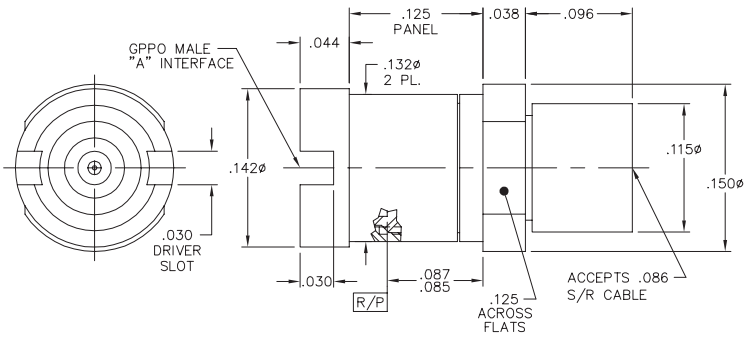
B001-D3X-01

# GPPO® to .086 Cable Connectors

## Male Bulkhead to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-D3X-02[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-01, B097-A99-01 | AP01-111 | |
| B014-D3X-07[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-01, B097-A99-01 | AP01-111 | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO® male bulkhead connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



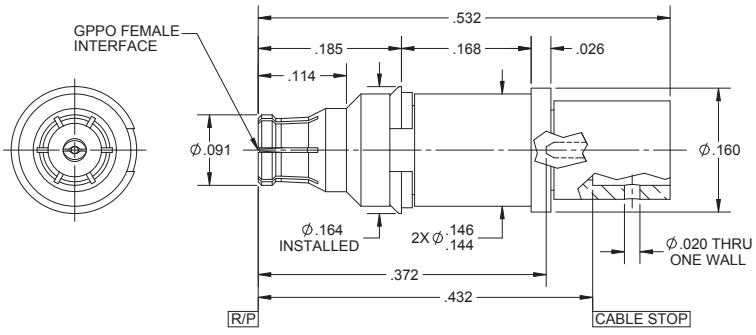

B016-D3X-02

B016-D3X-02

## Female Snap-In to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-D11-04 | B096-A93-01, A096-A99-09, L096-A99-01, 9001-824-0 | - | |

*Flex cable can be substituted in place of .086 semi-rigid.
**Additional cable options for GPPO female snap-in connectors are available.




B014-D11-04

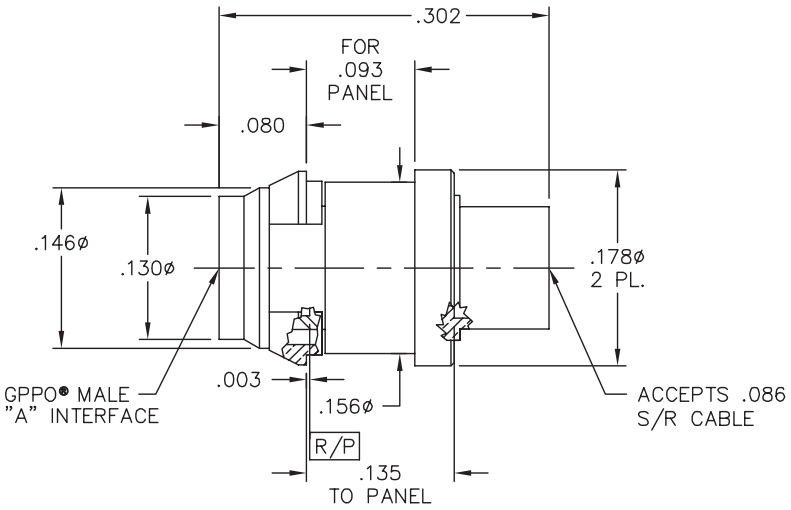
B014-D11-04

# GPPO® to .086 Cable Connectors

## Male Snap-In to .086 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-D3X-01[1] | B096-A99-01, L096-A99-01, B098-A99-05 | AP01-092 | |
| B018-D96-01 | B096-A99-02, L096-A99-01, B098-A99-05 | AP01-090 | Float mount |

*Flex cable can be substituted in place of .086 semi-rigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B016-D3X-01

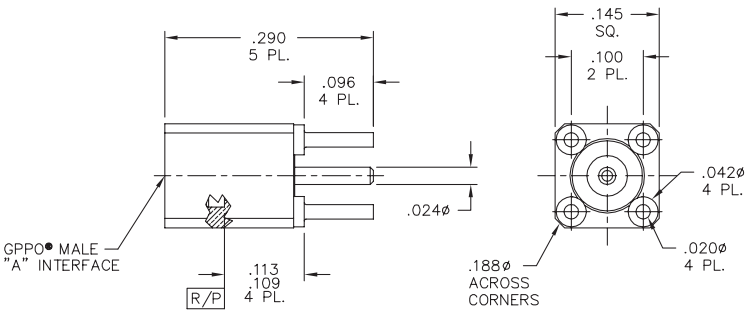
B016-D3X-01

# GPPO® Vertical Launch PCB Mounts

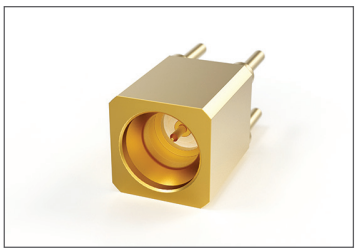
## Male Straight to PCB, Square Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B008-L1X-01[1] | - | - | .096 leg length |
| B008-L1X-01@T13[1] | - | - | .096 leg length, on tape and reel |
| B008-L1X-01-T[1] | - | - | .096 leg length, solder dipped |
| B008-L1X-01-T@T13[1] | - | - | .096 leg length, solder dipped, on tape and reel |
| B008-L1X-07-T[1] | - | - | .140 leg length, solder dipped |
| B008-L1X-03[1] | - | - | .200 leg length |
| B008-L1X-03-T[1] | - | - | .200 leg length, solder dipped |

*Additional leg length, body styles, and packaging options for GPPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B008-L1X-01

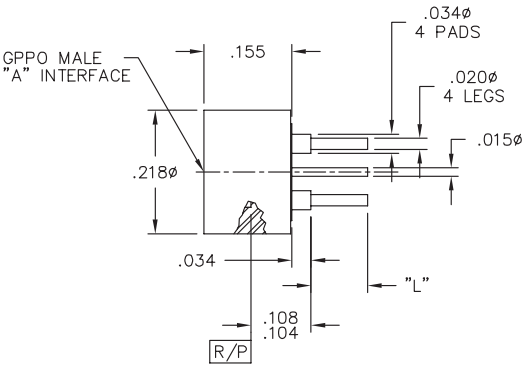


B008-L1X-01

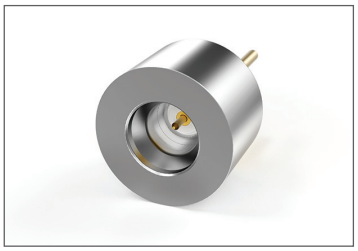
## Male Straight to PCB, Round Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B008-L3X-01-TAB[1] | - | - | .055, .100 leg length |

*Additional leg length, body styles, and packaging options for GPPO male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B008-L3X-01-TAB



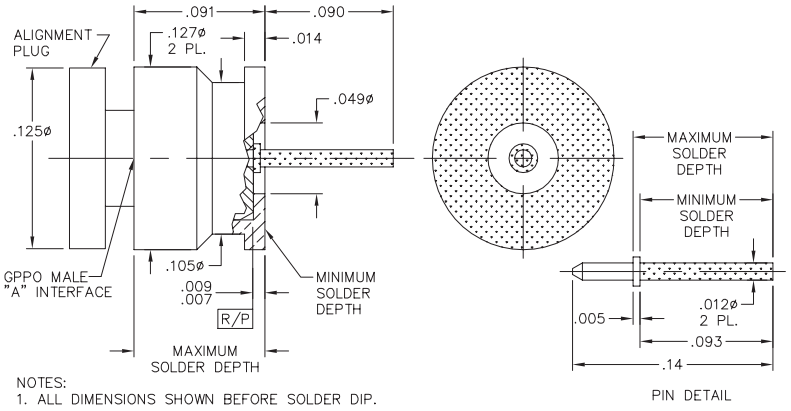
B008-L3X-01-TAB

# GPPO® Vertical Launch PCB Mounts

## Male Straight to PCB, Separate Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B012-L1X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .093 pin length |
| B012-L1X-01-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .093 pin length, solder dipped |
| B012-L1X-02[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .005 pin length |
| B012-L1X-04[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .093 pin length |
| B012-L1X-09-T[1] | - | - | .090 pin length, solder dipped, interface plug |
| B012-L1X-09-T@T13[1] | - | - | .090 pin length, solder dipped, interface plug, on tape and reel |
| B012-L1X-16-T[1] | - | - | .009 pin length, solder dipped, interface plug |

*Additional leg length, body styles, and packaging options for GPPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B012-L1X-09-T

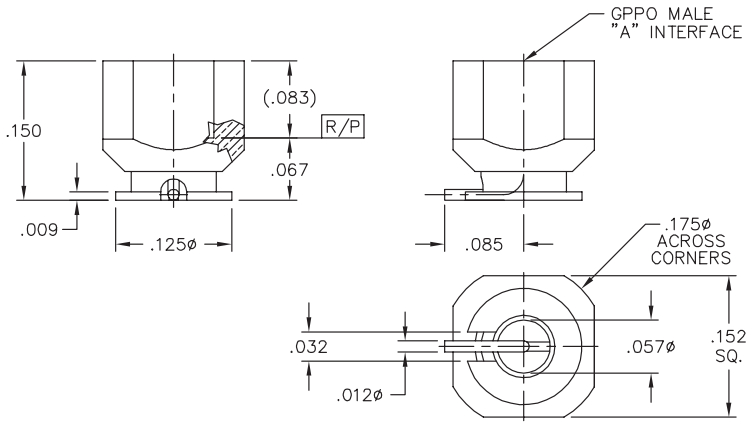
B012-L1X-09-T

# GPPO® Vertical Launch PCB Mounts

## Male Straight to PCB, Right-Angle (R/A) Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B012-P9X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs |
| B012-P9X-01@T13[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, on tape and reel |
| B012-P9X-01-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, solder dipped |
| B012-P9X-01-T@T13[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, solder dipped, on tape and reel |
| B012-P9X-02[1] | - | - | .075 leg length, interface plug |
| B012-P9X-02@T13[1] | - | - | .075 leg length, interface plug, on tape and reel |
| B012-P9X-02-T[1] | - | - | .075 leg length, solder dipped, interface plug |
| B012-P9X-02-T@T13[1] | - | - | .075 leg length, solder dipped, interface plug, on tape and reel |
| B012-P9X-04[1] | - | - | .125 leg length, interface plug |
| B012-P9X-04-T[1] | - | - | .125 leg length, solder dipped, interface plug |
| B012-P9X-04-T@T13[1] | - | - | .125 leg length, solder dipped, interface plug, on tape and reel |
| B012-P9X-08[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .100 leg length |
| B012-P9X-09[1] | - | - | .075 leg length, interface plug |
| B012-P9X-10-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, solder dipped |
| B012-P9X-10-T@T13[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, solder dipped, on tape and reel |
| B012-P9X-11-T[1] | - | - | .075 leg length, solder dipped, interface plug |
| B012-P9X-11-T@T13[1] | - | - | .075 leg length, solder dipped, interface plug, on tape and reel |
| B012-P9X-13[1] | - | - | No legs, interface plug |
| B012-P9X-14-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | No legs, solder dipped |
| B012-P9X-16[1] | - | - | .100 leg length, solder dipped, interface plug |

*Additional leg length, body styles, and packaging options for GPPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B012-P9X-01

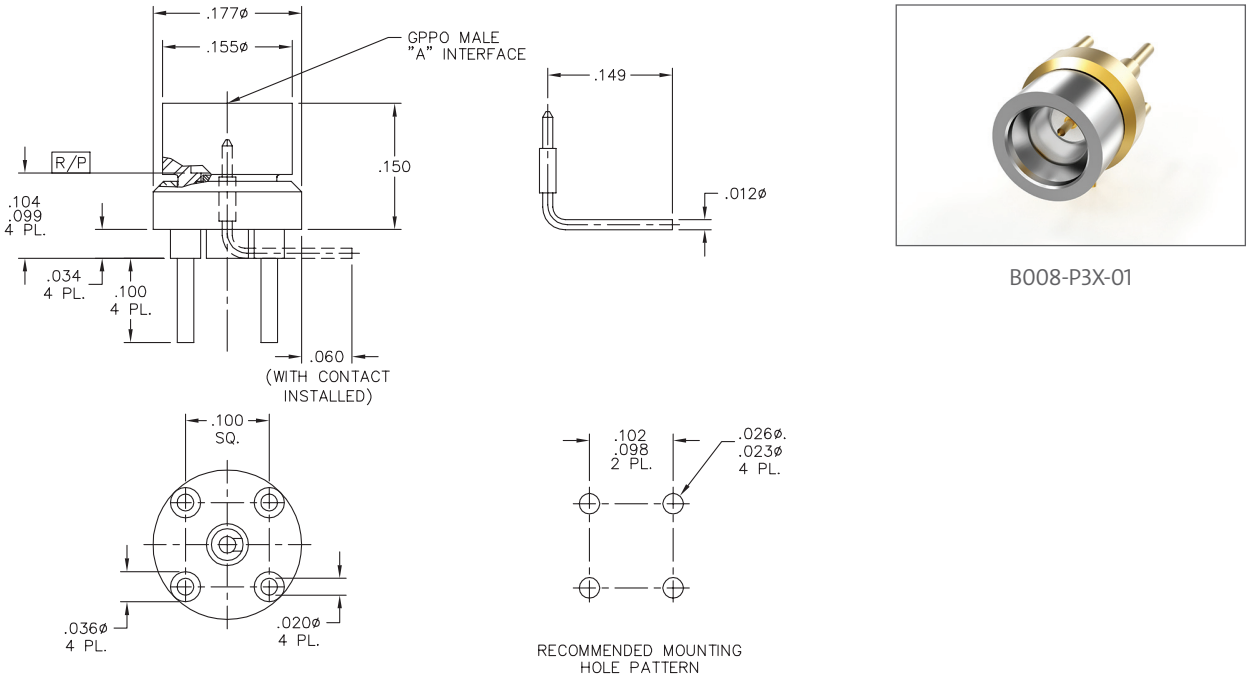
B012-P9X-01

# GPPO® Vertical Launch PCB Mounts

## Male Straight to PCB, Separate Right-Angle (R/A) Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B008-P3X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .100 leg length |
| B008-P3X-04-TAB[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | .055, .100 leg length |

*Additional leg length, body styles, and packaging options for GPPO® male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B008-P3X-01



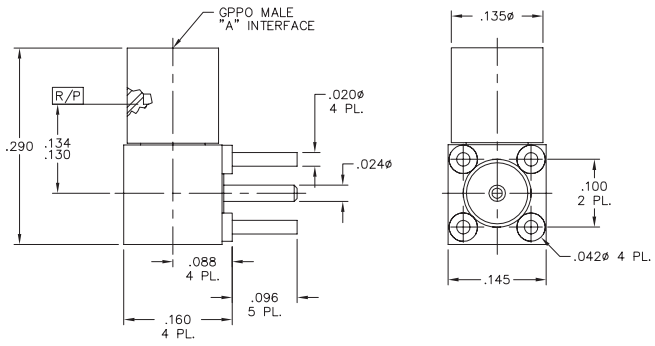
B008-P3X-01

# GPPO® Right-Angle PCB Mounts

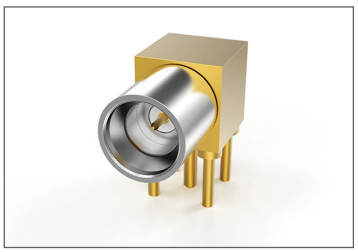
## Male Right Angle to PCB

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B009-P3X-01[1] | - | - | .096 leg length |
| B009-P3X-01-T[1] | - | - | .096 leg length |
| B009-P3X-01-T@T13[1] | - | - | .096 leg length, on tape and reel |
| B009-P3X-02[1] | - | - | .135 leg length |
| B009-P3X-02-T[1] | - | - | .135 leg length |
| B009-P3X-02-T@T13[1] | - | - | .135 leg length, on tape and reel |
| B009-P3X-03[1] | - | - | .072 leg length |
| B009-P3X-05[1] | - | - | .085 leg length |
| B009-P3X-09[1] | - | - | .185 leg length |

*Additional leg length, body styles, and packaging options for GPPO® male right-angle to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B009-P3X-01

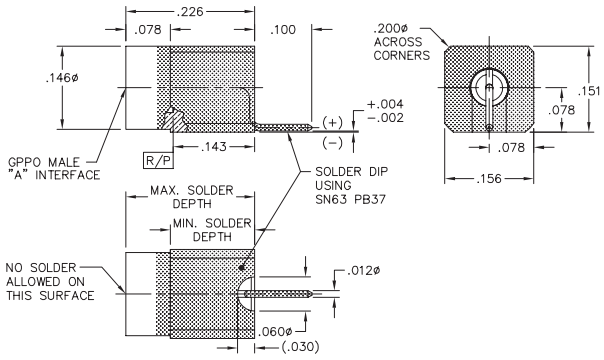


B009-P3X-01

## Male Right-Angle Z-Pin to PCB

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B013-L9X-01[1] | - | - | |
| B013-L9X-01-T[1] | - | - | Solder dipped |

*Additional leg length, body styles, and packaging options for GPPO male right-angle to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B013-L9X-01

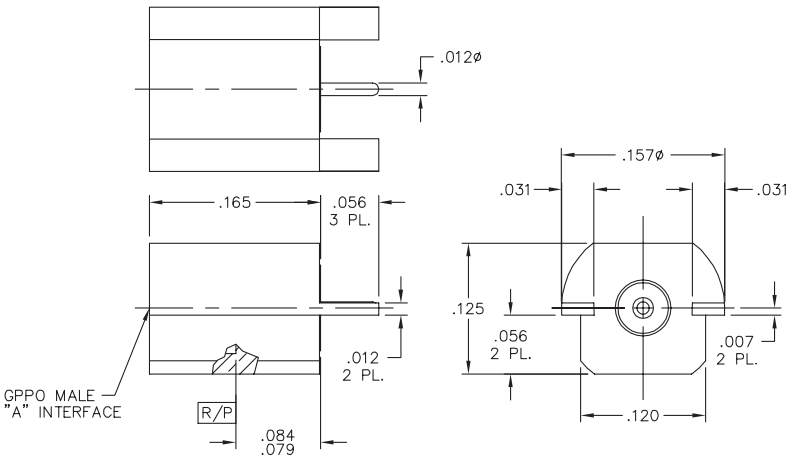
B013-L9X-01

# GPPO® Edge Mounts

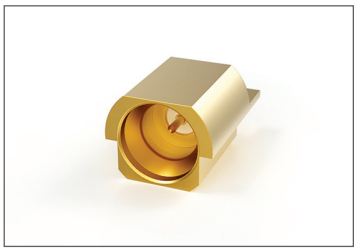
## Male Edge Flush Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B010-L1X-01[1] | - | - | |
| B010-L1X-01-T[1] | - | - | Solder dipped |
| B010-L1X-01-T@T13[1] | - | - | Solder dipped, on tape and reel |
| B010-L1X-04-T[1] | - | - | Solder dipped, interface plug |

*Additional body styles and packaging options for GPPO® male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B010-L1X-01

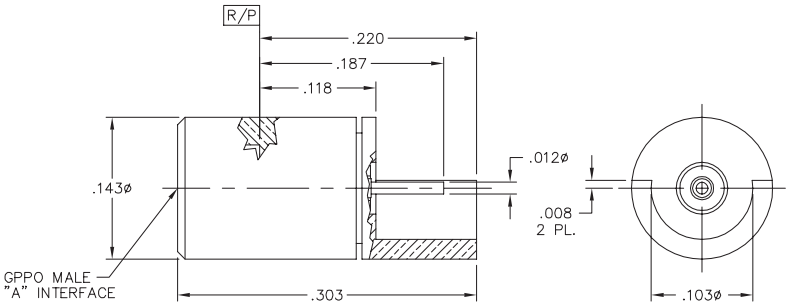


B010-L1X-01

## Male Edge Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B010-L8X-02[1] | - | - | |
| B010-L8X-02-T[1] | - | - | Solder dipped |

*Additional body styles and packaging options for GPPO male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B010-L8X-02

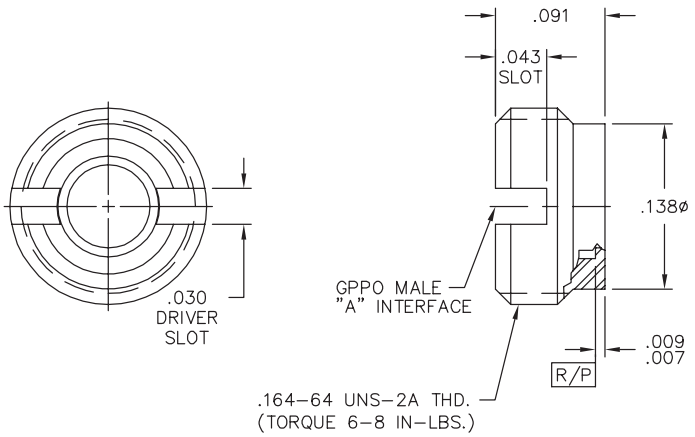
B010-L8X-02

# GPPO® Thread-In Shrouds

## Male Thread-In Shroud (No Pin)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B003-A2X-01[1] | B097-A99-01 (FD), B097-A99-02 (SB), B099-A99-01, B099-A99-02, B090-A99-05 | AP01-101 | |

*Additional body styles and packaging options for GPPO® thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



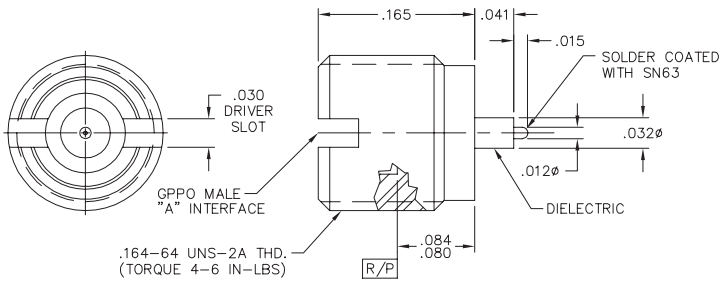

B003-A2X-01

B003-A2X-01

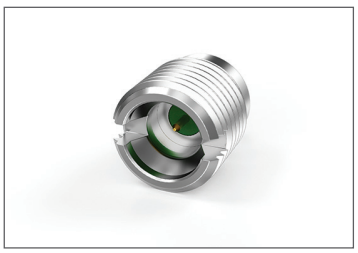
## Male Thread-In Shroud (With Pin)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B003-L3X-01[1] | B097-A99-01 (FD), B097-A99-02 (SB), B099-A99-01, B099-A99-02, B090-A99-05 | - | .015 pin length |
| B003-L3X-02[1] | B097-A99-01 (FD), B097-A99-02 (SB), B099-A99-01, B099-A99-02, B090-A99-05 | - | .065 pin length |
| B003-L3X-05[1] | B097-A99-01 (FD), B097-A99-02 (SB), B099-A99-01, B099-A99-02, B090-A99-05 | - | .015 pin length |
| B003-L3X-11[1] | B097-A99-01 (FD), B097-A99-02 (SB), B099-A99-01, B099-A99-02, B090-A99-05 | - | .025 pin length |
| B024-L3X-02[1] | B097-A99-01 (FD), B097-A99-02 (SB) | - | Ø.015 pin, .092 pin length when installed, packaged loose |

*Additional body styles and packaging options for GPPO thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B003-L3X-05



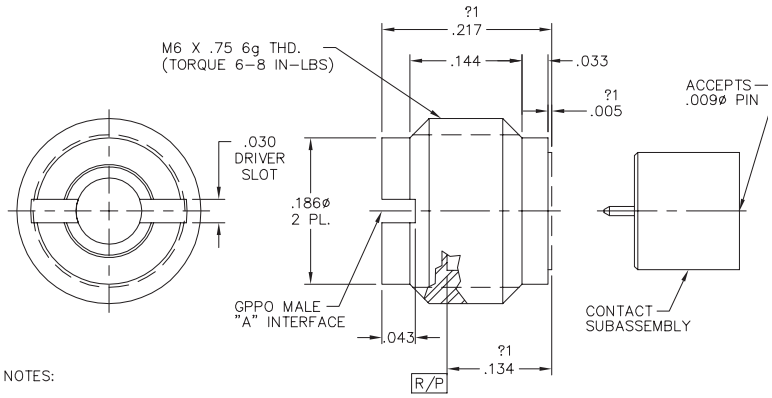
B003-L3X-05

# GPPO® Thread-In Shrouds

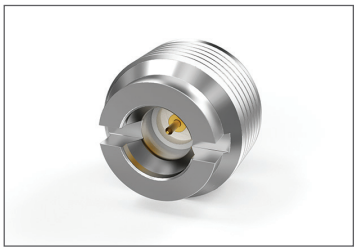
## Male Thread-In Shroud (Accepts Pin Subassembly)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B003-N3X-01[1] | L091-A99-05, L091-A99-06, A090-A99-07, B097-A99-01 (FD), B097-A99-02 (SB) | AP01-104 | Accepts Ø.012 pin subassembly |
| B003-N3X-02[1] | B097-A99-01 (FD), B097-A99-02 (SB) | - | Accepts Ø.009 pin subassembly |

*Additional body styles and packaging options for GPPO® thread-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B003-N3X-02



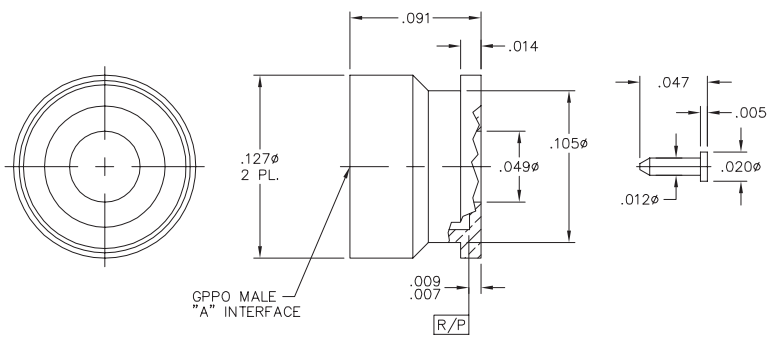
B003-N3X-02

# GPPO Solder-On Shrouds

## Male Solder-On Shroud with Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B012-L1X-03[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | Accepts Ø.012 pin (included) |
| B012-L1X-11[1] | - | - | Accepts Ø.012 pin (included), alignment plug |
| B012-L1X-11-T[1] | - | - | Accepts Ø.012 pin (included), solder dipped, alignment plug |

*Additional body styles and packaging options for GPPO shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B012-L1X-03

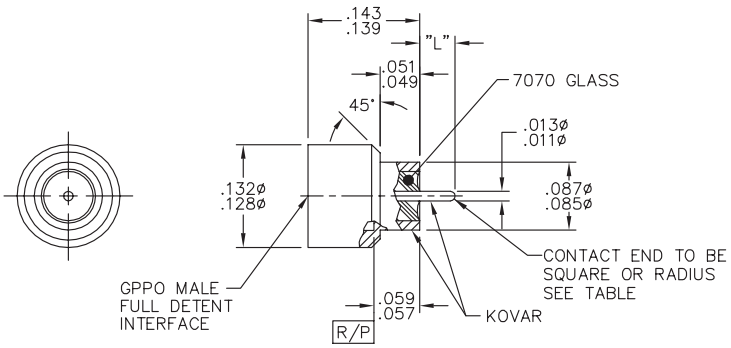
B012-L1X-03

# GPPO® Hermetic Shrouds

## Male Hermetic Shroud (Full Shroud)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B007-M4X-01-TAB-R[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | Radius pin, pin lengths of .030 to .145 in .005 increments |
| B007-M4X-01-TAB-S[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | Square pin, pin lengths of .030 to .145 in .005 increments |

*Additional body styles and packaging options for GPPO® shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



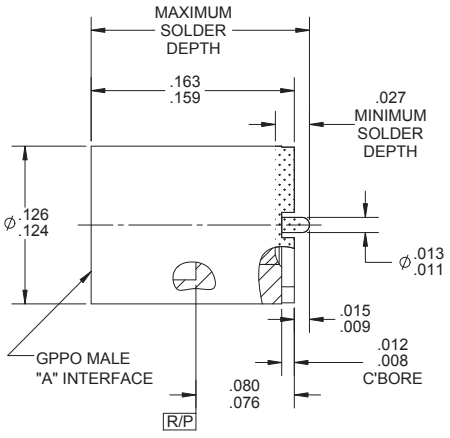

B007-M4X-01-TAB-R

B007-M4X-01-TAB-R

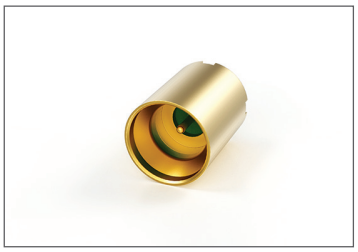
## Male Hermetic Shroud (Solder-In)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B007-L4X-17[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | |
| B007-L4X-25-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | Solder dipped |
| B007-L4X-27-T[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | Solder dipped |

*Additional body styles and packaging options for GPPO shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B007-L4X-27-T



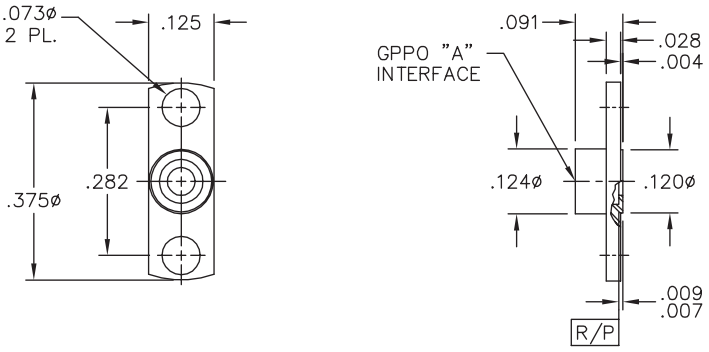
B007-L4X-27-T

# GPPO® Flange Mounts

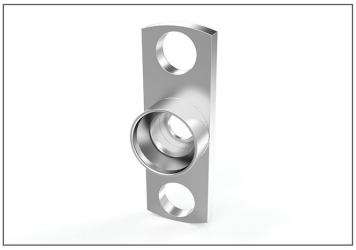
## Male Flange Mount (Two Hole, No Center Conductor)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B001-A2X-01[1] | B090-A99-09, B090-A99-01 (FD), B090-A99-02 (SB) | - | Flange diameter Ø.375<br>Flange width .125<br>Hole spacing .282<br>Hole size Ø.073 |
| B001-A2X-02[1] | B090-A99-08, B090-A99-01 (FD), B090-A99-02 (SB) | - | Flange diameter Ø.625<br>Flange width .150<br>Hole spacing .481<br>Hole size Ø.103 |

*Additional body styles and packaging options for GPPO® flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B001-A2X-01

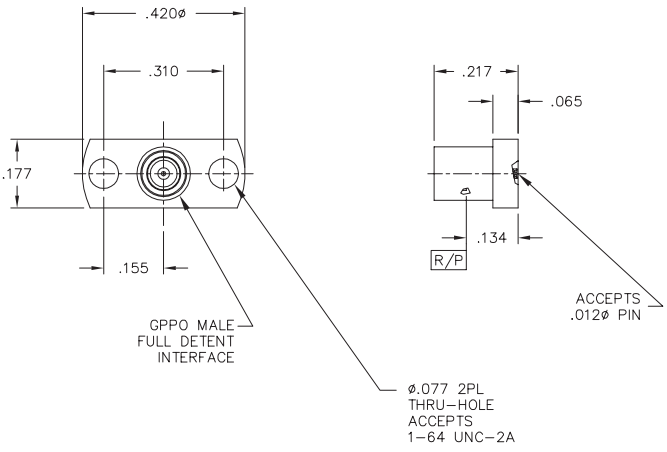


B001-A2X-01

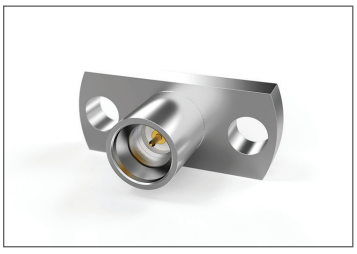
## Male Flange Mount (Two Hole, Accepts Ø.012 Center Conductor)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B001-N33-02 | B097-A99-01 | - | Flange diameter Ø.420<br>Flange width .177<br>Hole spacing .310<br>Hole size Ø.077 |

*Additional body styles and packaging options for GPPO flange-mount connectors are available.




B001-N33-02



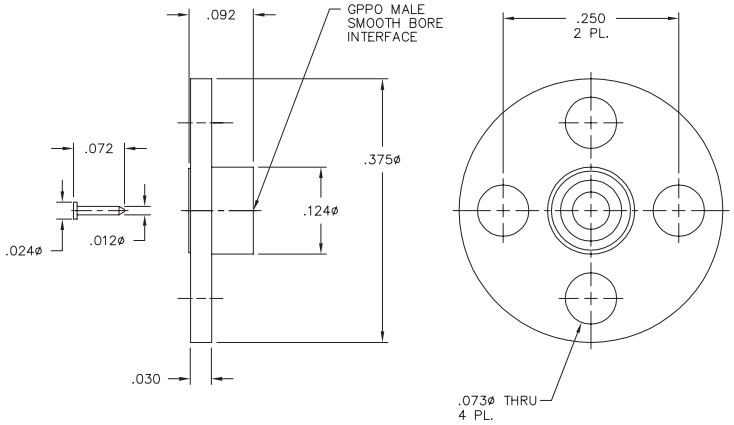
B001-N33-02

# GPPO® Flange Mounts

## Male Flange Mount (Four Hole, Accepts Ø.012 Center Conductor)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B001-L15-01 | B097-A99-02 | - | Flange diameter Ø.375<br>Hole spacing .250 square<br>Hole size Ø.073 |

*Additional body styles and packaging options for GPPO® flange-mount connectors are available.




B001-L15-01

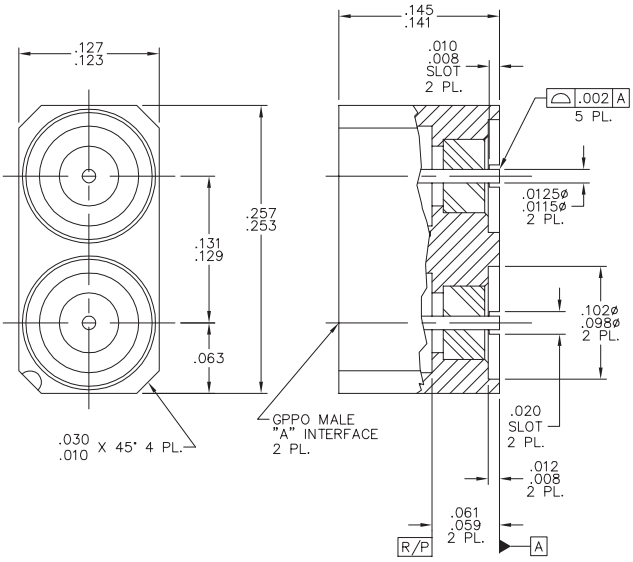
B001-L15-01

# GPPO® Multiposition Blocks

## Male Two-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B007-L4X-16[1] | - | - | .130 interface pitch, straight pin |

*Additional body styles and packaging options for GPPO® multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



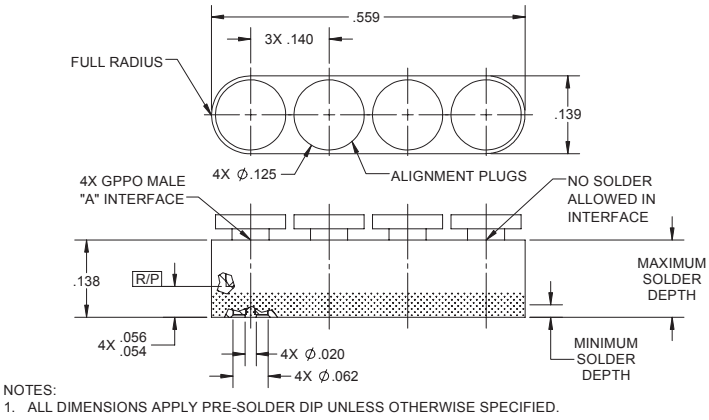

B007-L4X-16

B007-L4X-16

## Male Four-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B036-T7X-01-T[1] | - | - | .140 interface pitch, straight pin, solder dipped |
| B036-T47-05 | - | - | Varied interface pitch, straight pin |

*Additional body styles and packaging options for GPPO multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B036-T7X-01-T

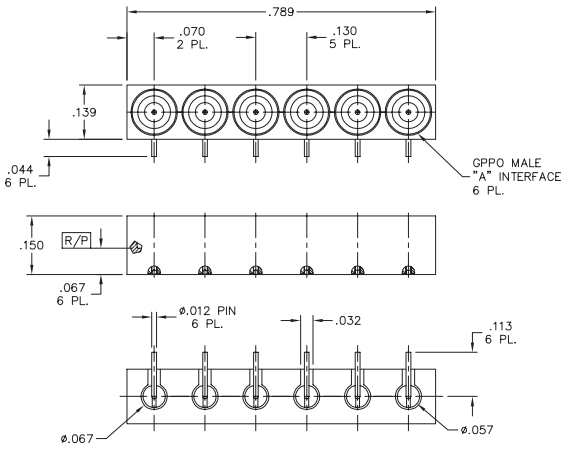
B036-T7X-01-T

# GPPO® Multiposition Blocks

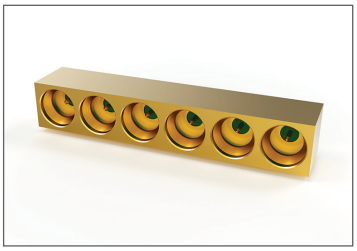
## Male Six-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B039-P9X-01[1] | - | - | .130 interface pitch, R/A pin |
| B036-L93-01-T | - | - | .250 interface pitch, straight pin, solder dipped |

*Additional body styles and packaging options for GPPO® multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B039-P9X-01



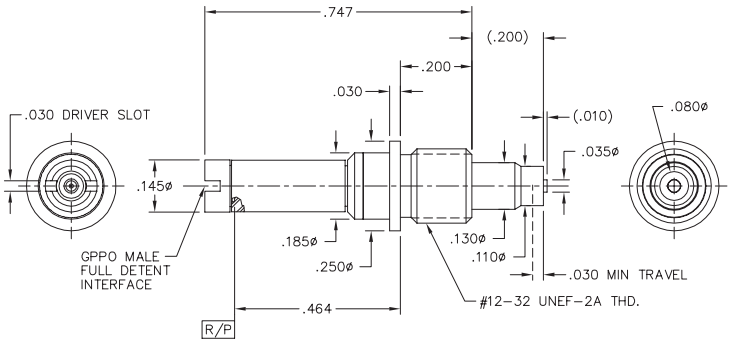
B039-P9X-01

# GPPO® Accessories

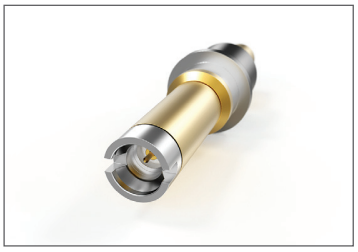
## Pogo Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B003-T93-01 | - | - | |

*Additional body styles and packaging options for GPPO® accessories are available.




B003-T93-01

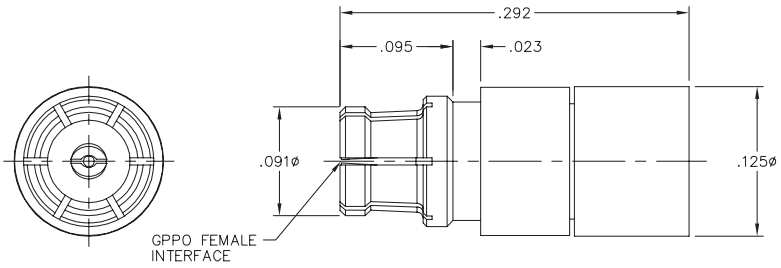


B003-T93-01

## Female 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B055-A11-01 | B098-A99-03 | - | Test-grade load |
| B055-A11-02 | B098-A99-03 | - | Field-grade load |
| B055-A11-05 | B098-A99-03 | - | R/A load |
| B055-A11-06 | B098-A99-03 | - | ½ watt |

*Additional body styles and packaging options for GPPO accessories are available.




B055-A11-01

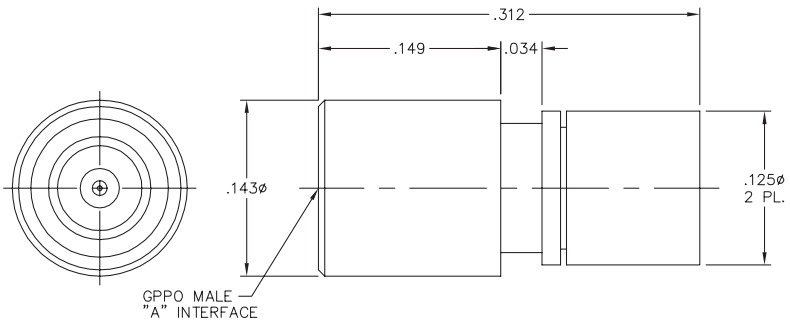
B055-A11-01

# GPPO® Accessories

## Male 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B055-A1X-01[1] | B098-A99-03 | - | Test-grade load |
| B055-A1X-02[1] | B098-A99-03 | - | Field-grade load |

*Additional body styles and packaging options for GPPO® accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



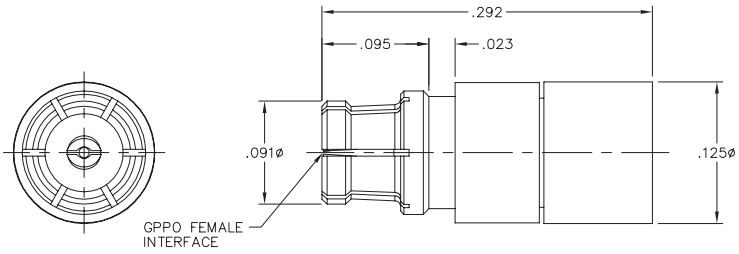

B055-A1X-01

B055-A1X-01

## Female Short

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B055-A11-08 | B098-A99-03 | - | |

*Additional body styles and packaging options for GPPO accessories are available.




B055-A11-08

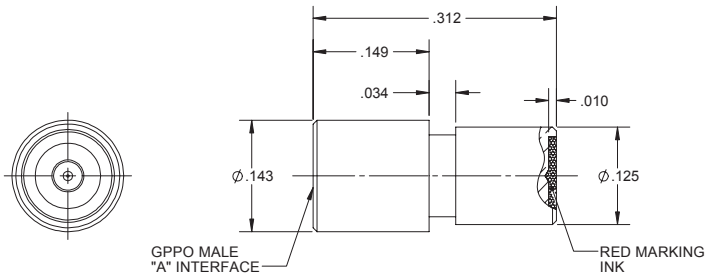
B055-A11-08

# GPPO® Accessories

## Male Short

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B055-A1X-05[1] | B098-A99-03 | - | |

*Additional body styles and packaging options for GPPO® accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



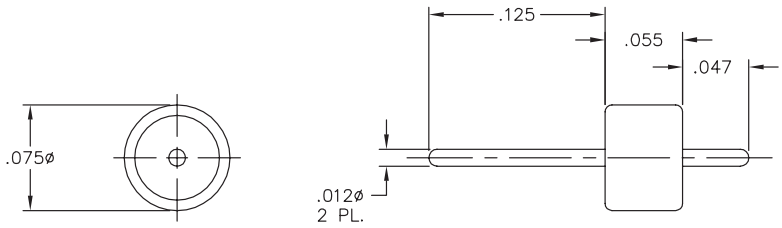

B055-A1X-05

B055-A1X-05

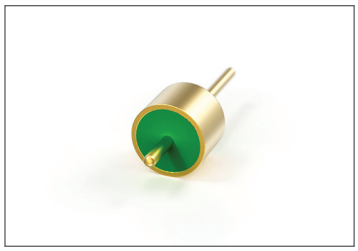
## 50 Ohm Hermetic Seal

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y007-L42-01 | - | - | .125 pin length |
| Y007-L42-05 | - | - | .091 pin length |

*Additional body styles and packaging options for GPPO accessories are available.




Y007-L42-01



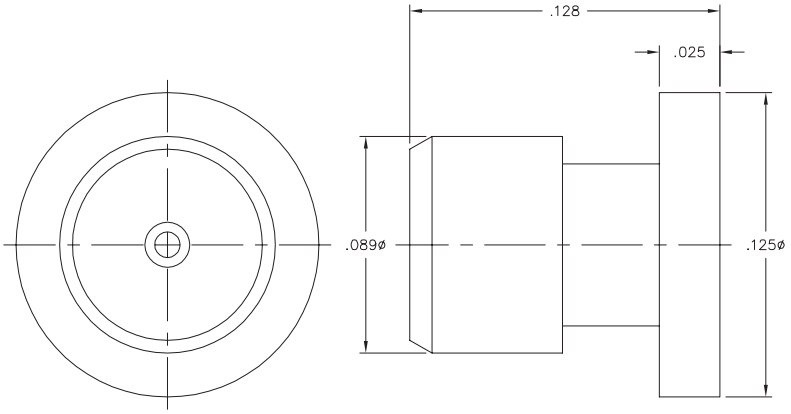
Y007-L42-01

# GPPO® Accessories

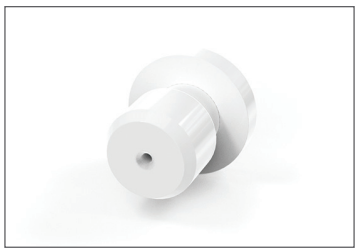
## Interface Plug (Alignment Plug)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y072-A09-04 | - | - | Full detent |
| Y072-A09-05 | - | - | Smooth bore |

*Additional body styles and packaging options for GPPO® accessories are available.

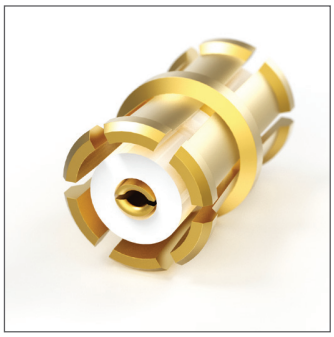



Y072-A09-05



Y072-A09-05

# G3PO™ Products



- Center-to-center spacing of 0.085-in and board-to-board spacing of 0.120-in are available for increased package density
- Frequency from DC to 100 GHz
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change
- Adapters available to SMA 1.85 mm

# G3PO™ Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | 50 Ohms nominal |
| **Frequency range** | DC to 100 GHz |
| **Temperature range** | -55°C to 165°C |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | 1.10: 1 to 26.5 GHz typical; 1.25: 1 typical to 65 GHz |
| **Insertion loss** | .03 √f (GHz) |
| **DWV @ sea level** | 250 $V_{rms}$ |
| **Insulation resistance** | 3,500 megohms minimum |
| **Contact resistance** | |
| **Outer conductor** | 2 milliohms maximum |
| **Inner conductor** | 6 milliohms maximum |
| **RF leakage** | -80 dB (typical mated pair) |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | Full detent (FD) - 100 minimum; smooth bore - 500 minimum |
| **Force to engage/disengage** | FD - 2.5 lbs typical/4.5 lbs typical;<br>SB - 1.2 lbs typical/1.0 lbs typical |
| **Tolerated misalignment** | |
| **Radial** | +/-0.010 |
| **Axial** | 0.010 (flush to 0.010 from the reference plane) |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |
| **Insulators** | Polyamide-imide per ASTM D5204 |

## Finish (typical)

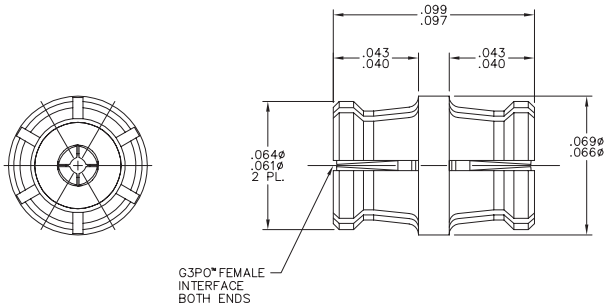
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |

# G3PO™ Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) – Standard

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| R1R1-0001-01 | .098 | R098-A99-02 | - | |
| R1R1-0001-27 | .315 | R098-A99-02 | - | |
| R1R1-0001-26 | .531 | R098-A99-02 | - | |

*Additional lengths available upon request.




R1R1-0001-01

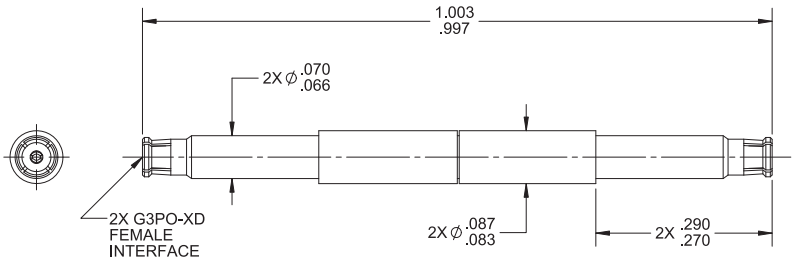
R1R1-0001-01

R1R1-0001-26

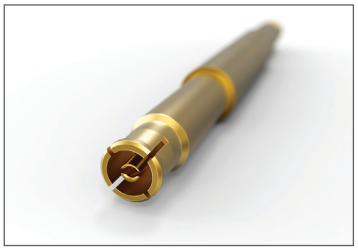
## Female Blind Mate Interconnect (Bullet) – XD Interface

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| R1R1-0001-21-0178 | .178 | R098-A99-02 | - | |
| R1R1-0001-31-1000 | 1.000 | R098-A99-02 | - | |
| R1R1-0001-19 | 1.687 | R098-A99-02 | - | |

*Additional lengths available upon request.




R1R1-0001-31-1000



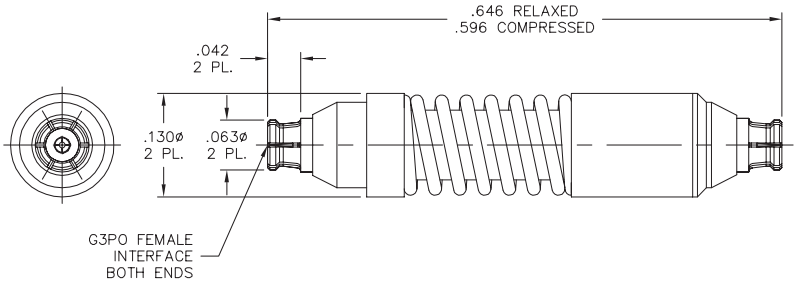
R1R1-0001-31-1000

# G3PO™ Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) – Spring Loaded/Self-Adjusting

| Catalog Number | Relaxed Length (inches) | Compressed Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|---|
| R1R1-0009-03 | .646 | .596 | R098-A99-02 | - | |

*O-rings and gaskets are for alignment only and are not to be used for shielding applications.




R1R1-0009-03

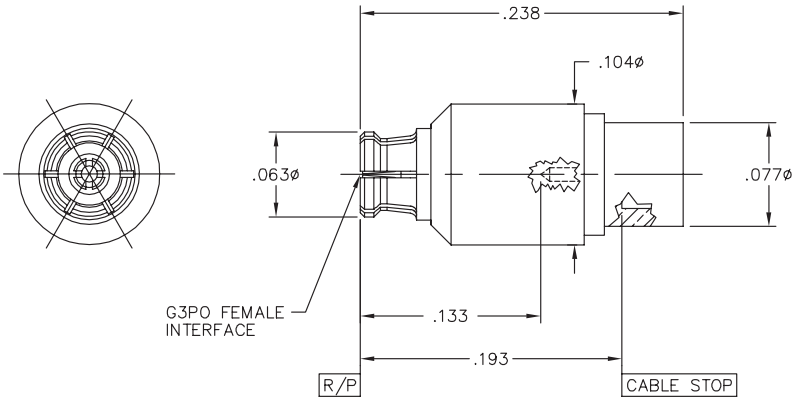
R1R1-0009-03

# G3PO™ to .047 Cable Connectors

## Female Straight to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R014-B11-01 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-157 | |
| R014-B11-02 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-157 | |
| R014-B11-03 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-157 | |
| R014-B71-01 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-169 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO™ female straight connectors are available.



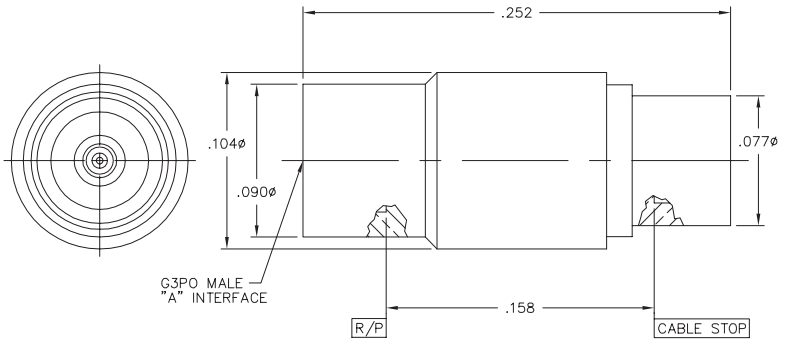

R014-B11-01

R014-B11-01

## Male Straight to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R014-B1X-01[1] | R096-A23-01 (FD), R096-A25-01 (SB) A096-A99-04, L096-A99-02 | AP01-158 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO male snap-in connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R014-B1X-01

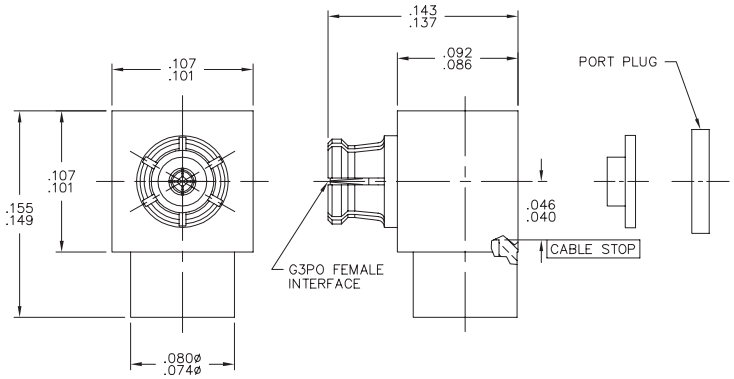
R014-B1X-01

# G3PO™ to .047 Cable Connectors

## Female Right-Angle (R/A) to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R015-B11-01 | R096-A95-01, A096-A99-09, L096-A99-02 | AP01-159 | |
| R015-B11-02 | R096-A95-01, A096-A99-09, L096-A99-02 | AP01-164 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO™ female right-angle connectors are available.



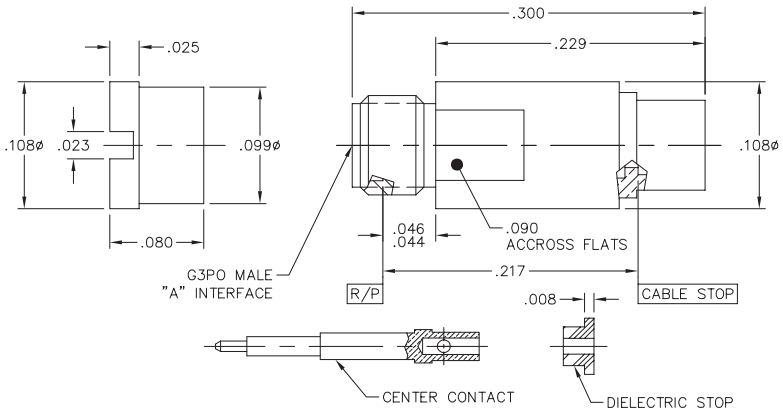

R015-B11-01

R015-B11-01

## Male Bulkhead to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R014-B8X-01[1] | R096-A23-01 (FD), R096-A25-01 (SB), A096-A99-04, L096-A99-02 | AP01-174 | |
| R014-D3X-01[1] | R096-A23-01 (FD), R096-A25-01 (SB), A096-A99-04, L096-A99-02 | AP01-173 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO male bulkhead connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R014-B8X-01

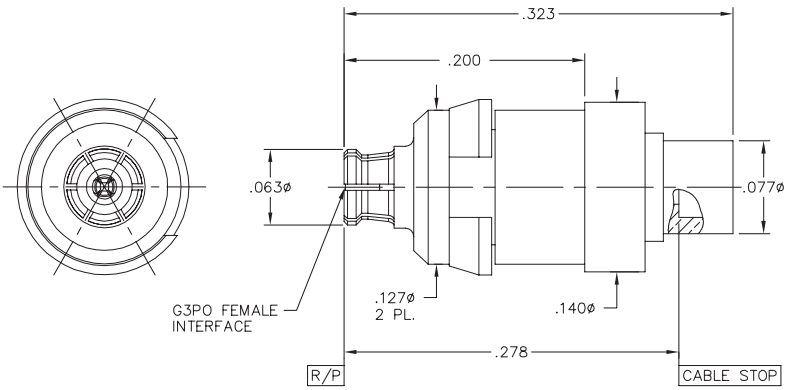
R014-B8X-01

# G3PO™ to .047 Cable Connectors

## Female Snap-In to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R016-B11-01 | R096-A95-01, A096-A99-04, L096-A99-02 | - | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO™ female snap-in connectors are available.



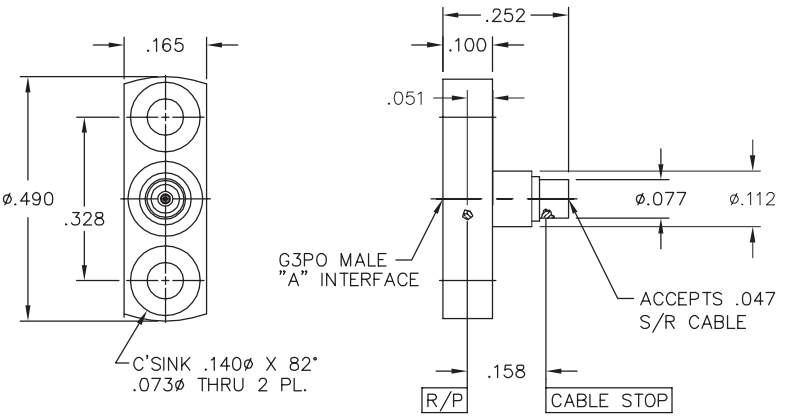

R016-B11-01

R016-B11-01

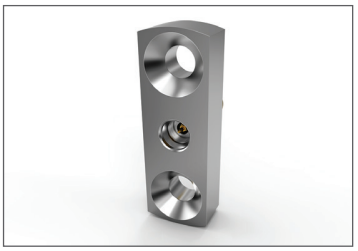
## Male Flange Mount to .047 Semi-Rigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R001-B3X-01[1] | R096-A23-01 (FD), R096-A25-01 (SB), A096-A99-04, L096-A99-02 | AP01-158 | |

*Flex cable can be substituted in place of .047 semi-rigid.
**Additional cable options for G3PO male flange-mount connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R001-B3X-01



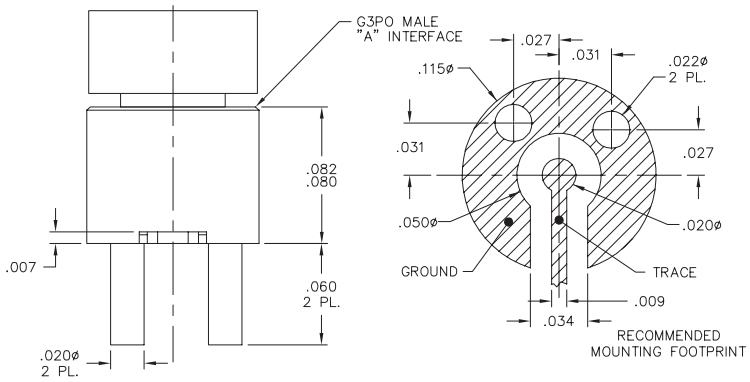
R001-B3X-01

# G3PO™ Vertical-Launch PCB Mounts

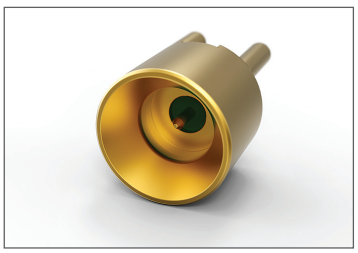
## Male Straight to PCB, Round Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R008-L1X-01[1] | - | - | .060 leg length, alignment plug |
| R008-L1X-02[1] | - | - | No legs |
| R008-L1X-02-T[1] | - | - | No legs, solder dipped |
| R008-L1X-02-T@T13[1] | - | - | No legs, solder dipped, on tape and reel |
| R008-L1X-08-T[1] | - | - | .015 alignment pin length, alignment plug, solder dipped |
| R008-L1X-08-T@T13[1] | - | - | .015 alignment pin length, alignment plug, solder dipped, on tape and reel |
| R007-T4X-02[1] | - | - | No legs |

*Additional leg length, body styles, and packaging options for G3PO™ male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R008-L1X-01

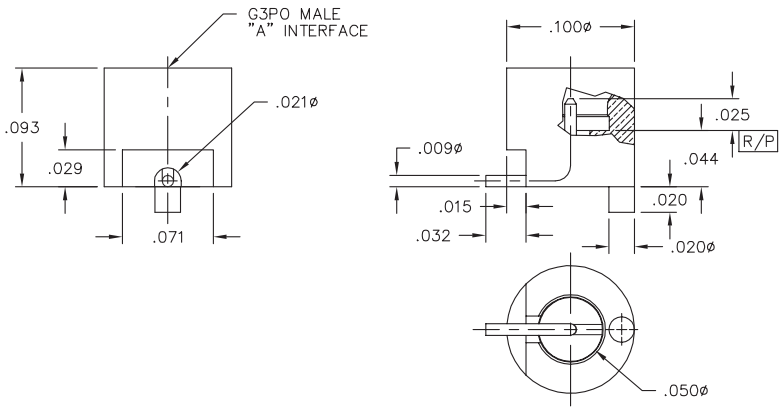


R008-L1X-01

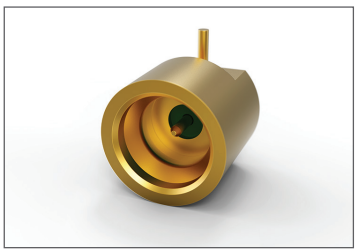
## Male Straight to PCB, Right-Angle (R/A) Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R012-P9X-01[1] | - | - | |

*Additional leg length, body styles, and packaging options for G3PO male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R012-P9X-01



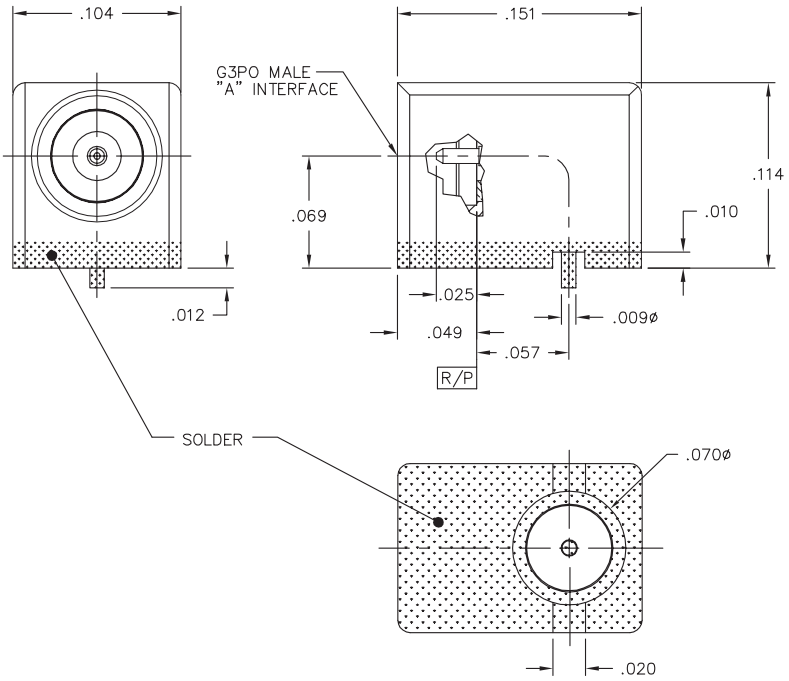
R012-P9X-01

# G3PO™ Right-Angle PCB Mounts

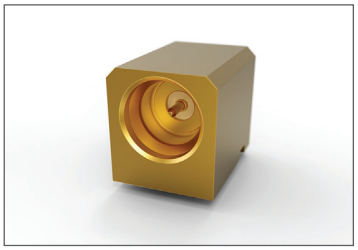
## Male Right-Angle to PCB

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R013-P7X-01-T[1] | - | - | |

*Additional leg length, body styles, and packaging options for G3PO™ male right-angle to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R013-P7X-01-T



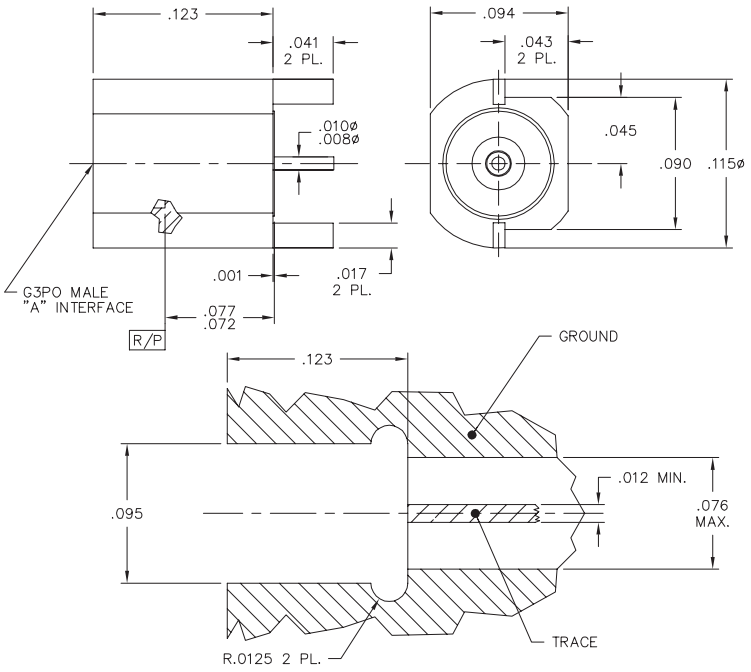
R013-P7X-01-T

# G3PO™ Edge Mounts

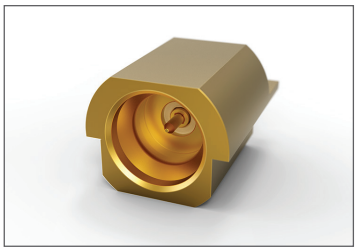
## Male Edge Flush Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R010-L1X-03[1] | - | - | |

*Additional body styles and packaging options for G3PO™ male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R010-L1X-03

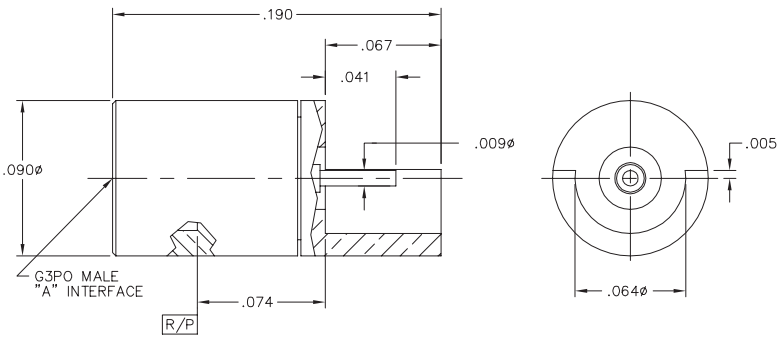


R010-L1X-03

## Male Edge Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R010-L1X-01[1] | - | - | |

*Additional body styles and packaging options for G3PO male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R010-L1X-01

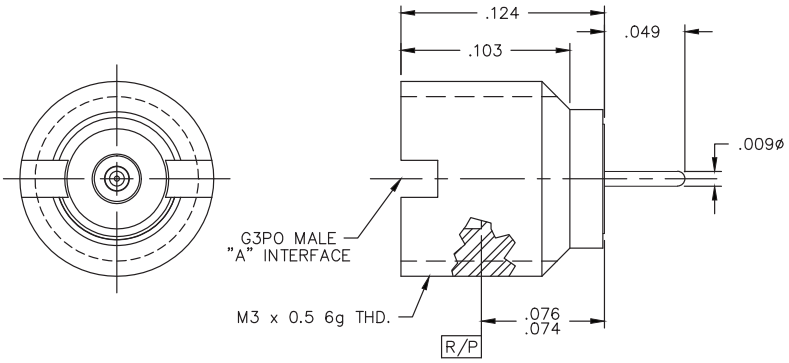
R010-L1X-01

# G3PO™ Thread-In Shrouds

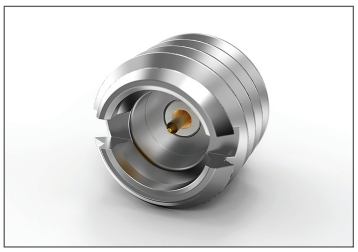
## Male Thread-In Shroud (With Pin)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R003-L3X-01[1] | - | - | |

*Additional body styles and packaging options for G3PO™ shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R003-L3X-01



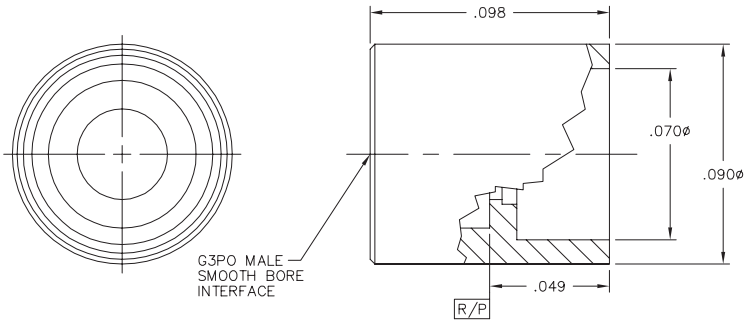
R003-L3X-01

# G3PO™ Solder-On Shrouds

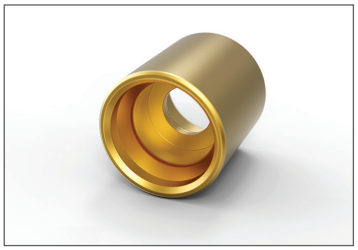
## Male Solder-On Shroud with Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R012-T95-04 | R096-A25-01 | - | Accepts Y071-T92-02 pin |

*Additional body styles and packaging options for G3PO™ shroud connectors are available.




R012-T95-04



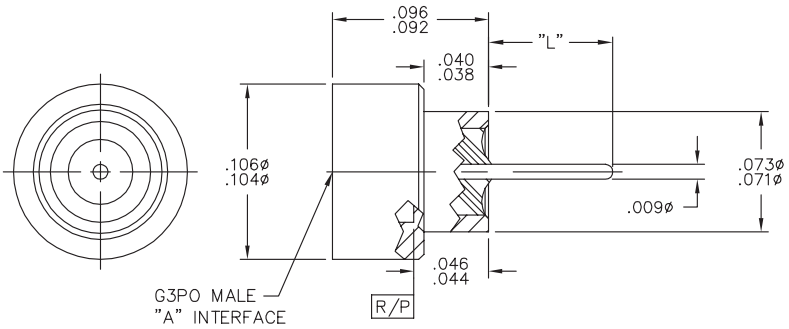
R012-T95-04

# G3PO™ Hermetic Shrouds

## Male Hermetic Shroud

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R007-L4X-05-TAB-R[1] | - | - | Radius pin, pin lengths of .025 to .075 in .005 increments |
| R007-L4X-05-TAB-S[1] | - | - | Square pin, pin lengths of .025 to .075 in .005 increments |

*Additional body styles and packaging options for G3PO™ shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



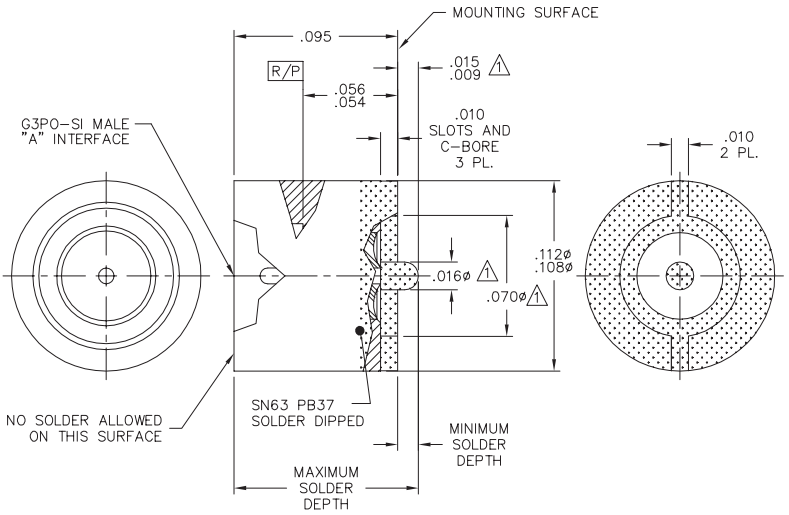

R007-L4X-05-TAB-R

R007-L4X-05-TAB-R

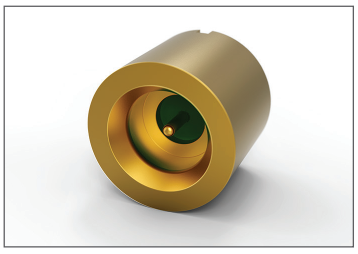
## Male Hermetic Shroud (Solder-In)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R007-L4X-11-T[1] | - | - | SI Interface, solder dipped |

*Additional body styles and packaging options for G3PO shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R007-L4X-11-T



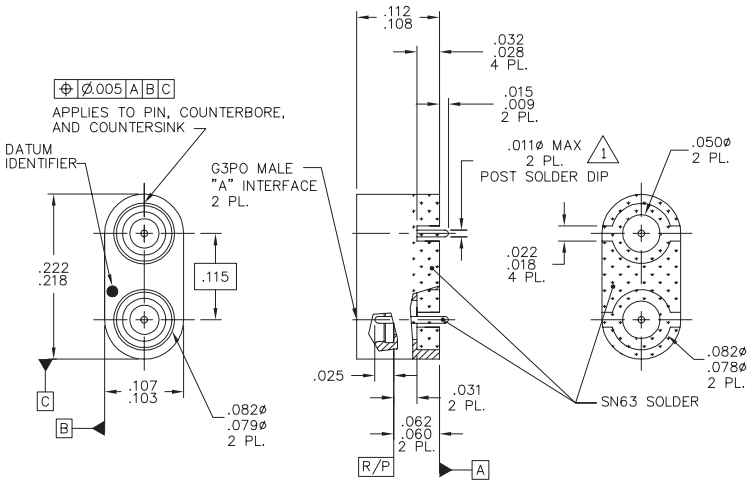
R007-L4X-11-T

# G3PO™ Multiposition Blocks

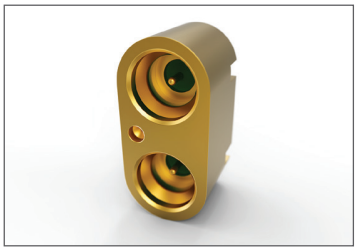
## Male Two-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R032-L4X-04-T[1] | - | - | .115 interface pitch, solder dipped |
| R032-L4X-07-T[1] | - | - | SI interface, .095 interface pitch, solder dipped |
| R032-L46-12-T | - | - | XD interface, .125 interface pitch, solder dipped |

*Additional body styles and packaging options for G3PO™ multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R032-L4X-04-T

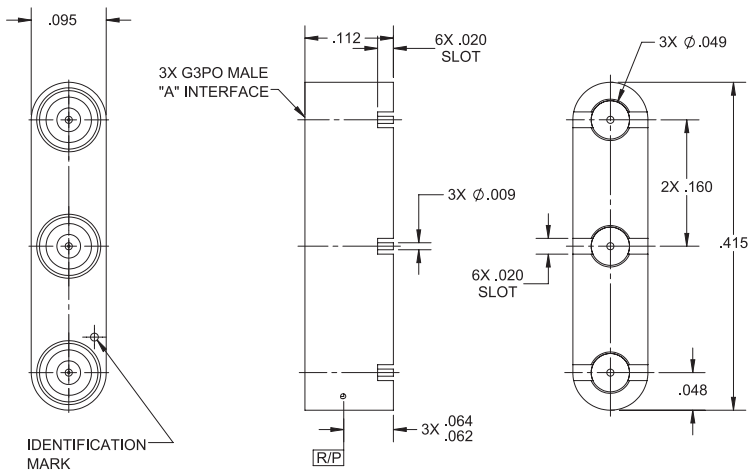


R032-L4X-04-T

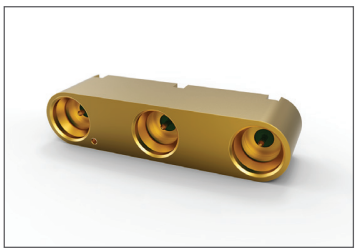
## Male Three-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R036-T4X-18[1] | - | - | .160 interface pitch |

*Additional body styles and packaging options for G3PO multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R036-T4X-18



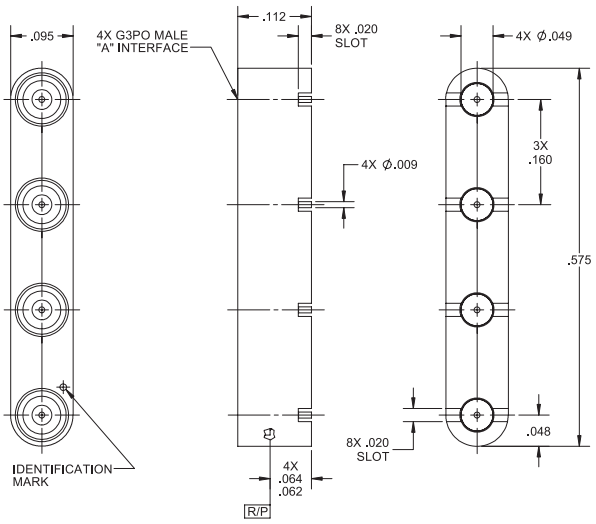
R036-T4X-18

# G3PO™ Multiposition Blocks

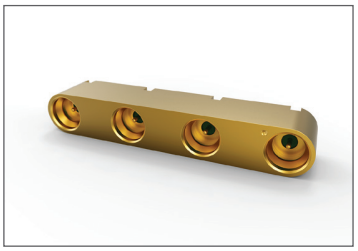
## Male Four-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R036-T4X-19[1] | - | - | .160 interface pitch |

*Additional body styles and packaging options for G3PO™ multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R036-T4X-19

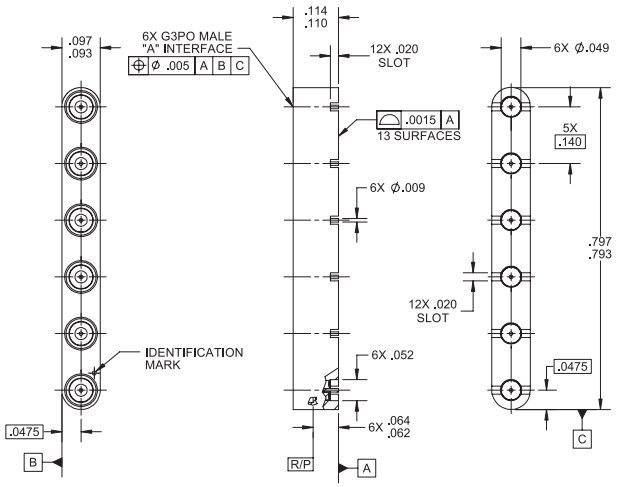


R036-T4X-19

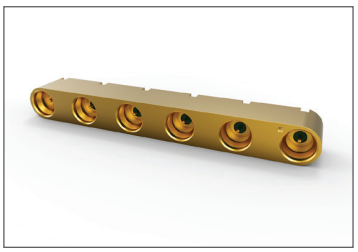
## Male Six-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R036-T4X-17[1] | - | - | .140 interface pitch |
| R036-T4X-22[1] | | | .180 interface pitch |

*Additional body styles and packaging options for G3PO multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R036-T4X-17



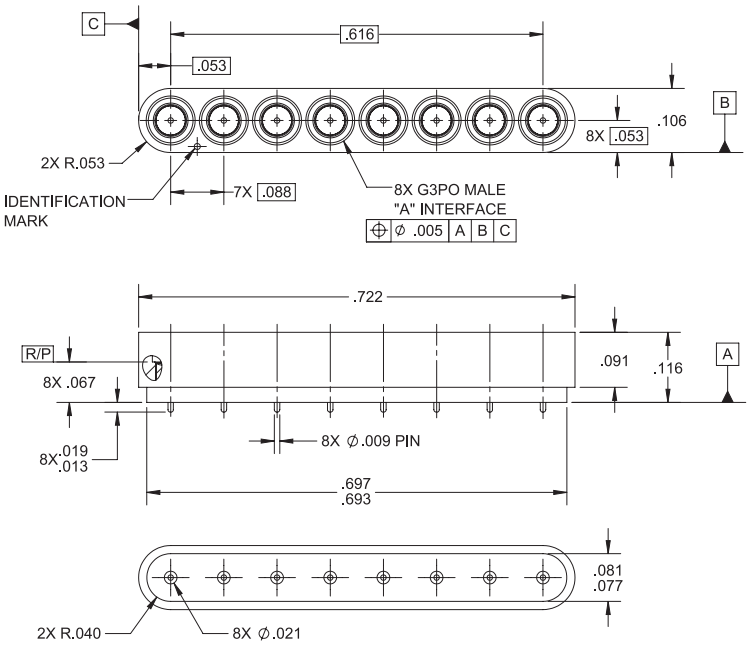
R036-T4X-17

# G3PO™ Multiposition Blocks

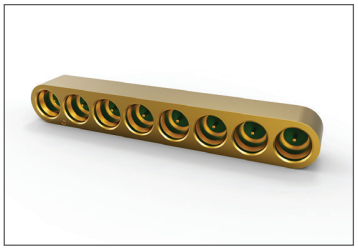
## Male Eight-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R032-L4X-10[1] | - | - | .088 interface pitch, hermetic |
| R032-L4X-14[1] | - | - | .088 interface pitch, hermetic |

*Additional body styles and packaging options for G3PO™ multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R032-L4X-14



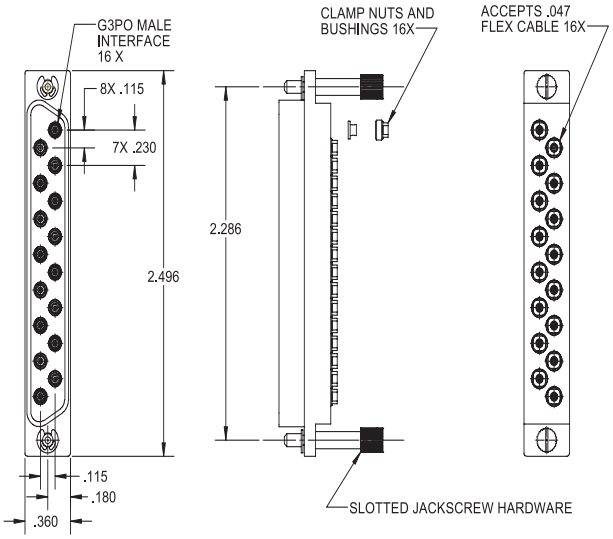
R032-L4X-14

# G3PO™ Multiposition Blocks

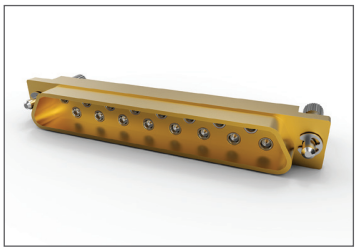
## Male 16-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R033-B53-01 | L096-A99-12 | AP01-146 | .230 interface pitch, micro-D receptacle to .047 flex cable, mates with R032-L95-01 |
| R032-L95-01 | - | - | .230 interface pitch, micro-D plug board mount, mates with R033-B53-01 |
| R036-T93-02 | - | - | .160 interface pitch, includes pins and interface plugs |
| R036-T95-03 | - | - | .160 interface pitch, includes pins and interface plugs |

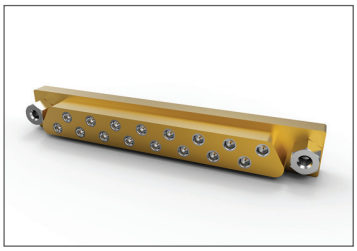
*Additional body styles and packaging options for G3PO™ multiposition blocks are available.




R033-B53-01



R033-B53-01



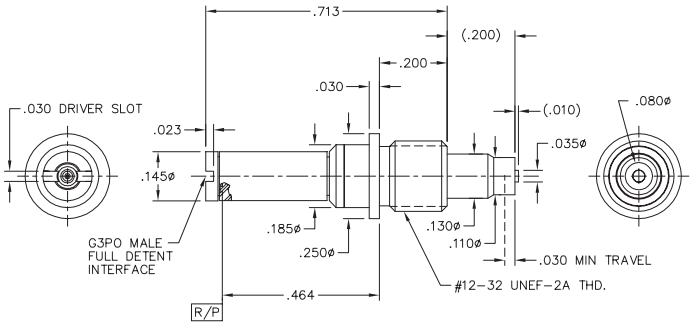
R032-L95-01

# G3PO™ Accessories

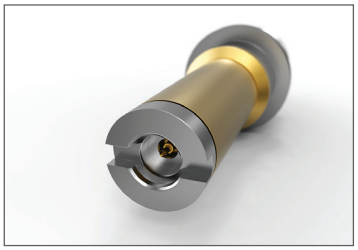
## Pogo Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R003-T93-01 | - | - | |

*Additional body styles and packaging options for G3PO™ accessories are available.




R003-T93-01

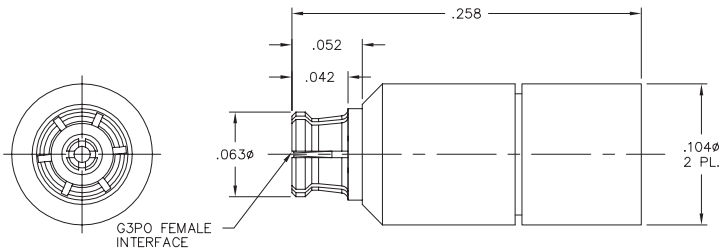


R003-T93-01

## Female 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R055-A11-01 | R098-A99-02 | - | |
| R055-A11-02 | R098-A99-02 | - | |

*Additional body styles and packaging options for G3PO accessories are available.




R055-A11-01

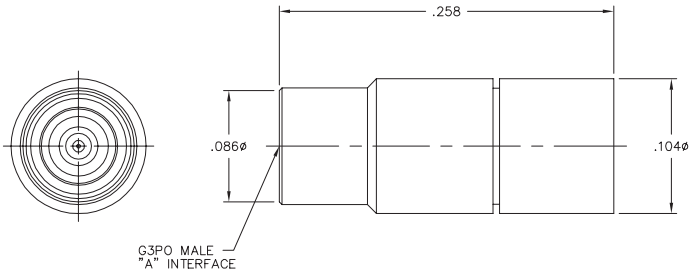
R055-A11-01

# G3PO™ Accessories

## Male 50 Ohm Load

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R055-A1X-01[1] | - | - | |

*Additional body styles and packaging options for G3PO™ accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



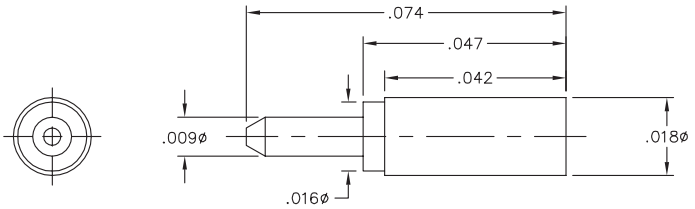

R055-A1X-01

R055-A1X-01

## Pin

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y071-T92-02 | - | - | |

*Additional body styles and packaging options for G3PO accessories are available.




Y071-T92-02

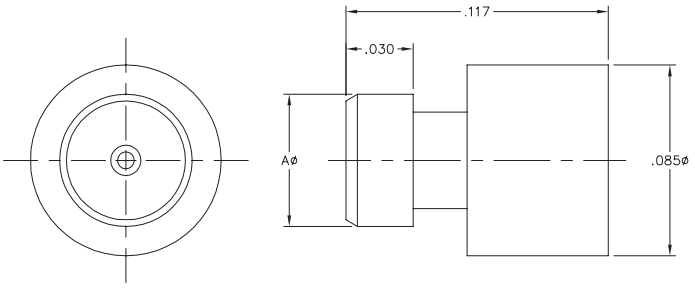
Y071-T92-02

# G3PO™ Accessories

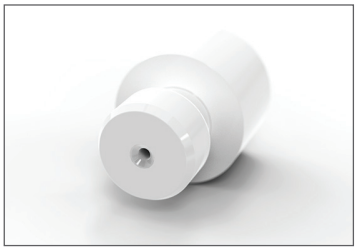
## Interface Plug (Alignment Plug)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y072-A0X-03[1] | - | - | |

*Additional body styles and packaging options for G3PO™ accessories are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



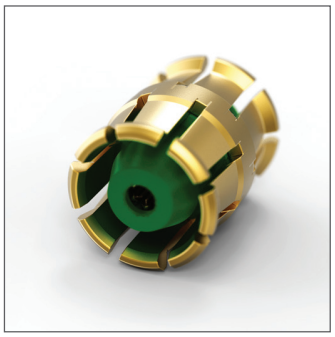

Y072-A0X-03



Y072-A0X-03

# G4PO™ Products

- Center-to-center spacing of 0.070-in and board-to-board spacing of 0.090-in are available for increased package density
- Frequency from DC to 60 GHz
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change



# G4PO™ Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | 50 Ohms nominal |
| **Frequency range** | DC to 60 GHz |
| **Temperature range** | -55°C to 165°C |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | 1.15:1 to 15 GHz typical; 1.25:1 to 60 GHz typical |
| **Insertion loss** | .03 √f (GHz) |
| **DWV @ sea level** | 250 $V_{rms}$ |
| **Insulation resistance** | 3,500 megohms minimum |
| **Contact resistance** | |
| **Outer conductor** | 2 milliohms maximum |
| **Inner conductor** | 6 milliohms maximum |
| **RF leakage** | -80 dB (typical mated pair) |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | Full detent (FD) - 100 minimum; smooth bore - 500 minimum |
| **Force to engage/disengage** | Full detent (FD) - .65 lbs typical/2.2 lbs typical;<br>SB - .20 lb typical/.15 lb typical |
| **Tolerated misalignment** | |
| **Radial** | +/-0.005 |
| **Axial** | 0.007 (flush to 0.007 from the reference plane) |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and/or ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and/or ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and/or ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |
| **Insulators** | Polyamide-imide per ASTM D5204 |

## Finish (typical)

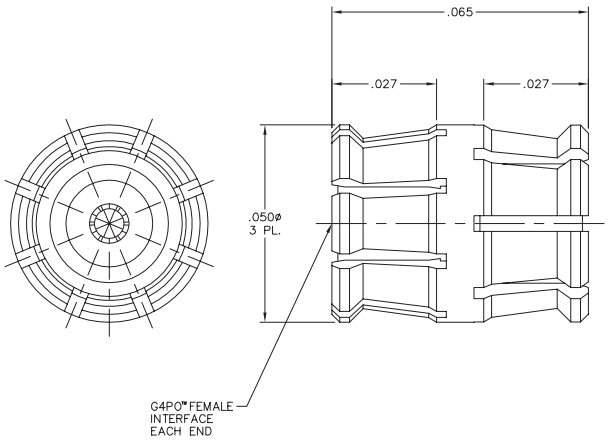
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |

# G4PO™ Blind Mate Interconnects

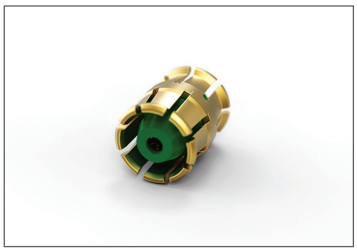
## Female Blind Mate Interconnect (Bullet) – Standard

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| S1S1-0001-01 | .065 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-01-100 | .100 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-105 | .105 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-110 | .110 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-115 | .115 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-120 | .120 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-200 | .200 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-250 | .250 | S094-A99-01 install, S095-A99-01 removal | - | |
| S1S1-0001-03-400 | .400 | S094-A99-01 install, S095-A99-01 removal | - | |

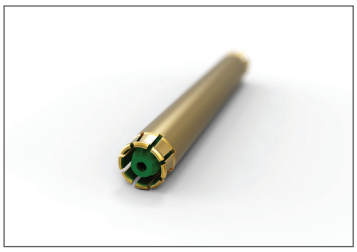
*Additional lengths available upon request.




S1S1-0001-01



S1S1-0001-01



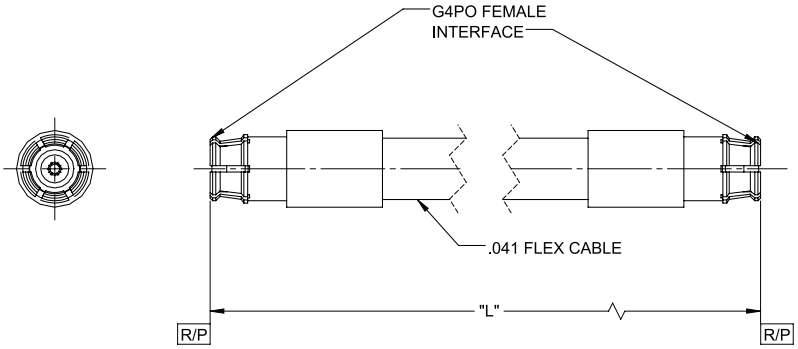
S1S1-0001-03-400

# G4PO™ to .041 Cable Connectors

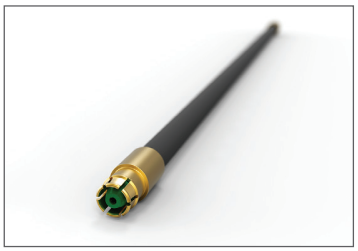
## G4PO™ Cable Assemblies to .041 Flex Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 2-S1A-S1A-16-L-0 | - | - | G4PO female straight to G4PO female straight, “L” denotes length of cable assembly in inches |
| 2-S1A-D1A-16-L | - | - | G4PO female straight to 2.92 mm jack straight, “L” denotes length of cable assembly in inches |
| 2-S1A-S1C-16-L | - | - | G4PO female straight to G4PO female R/A, “L” denotes length of cable assembly in inches |
| 2-S1C-S1C-16-L | - | - | G4PO female R/A to G4PO female R/A, “L” denotes length of cable assembly in inches |
| 2-S1C-D1A-16-L | - | - | G4PO female R/A to 2.92 mm jack straight, “L” denotes length of cable assembly in inches |

*Additional cable options for G4PO female straight connectors are available.




2-S1A-S1A-16-L-0



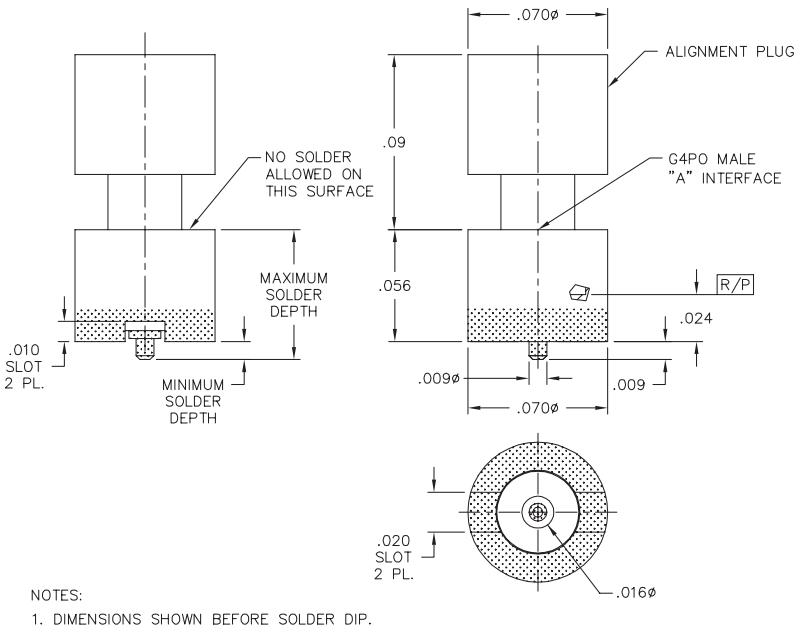
2-S1A-S1A-16-L-0

# G4PO™ Vertical Launch PCB Mounts

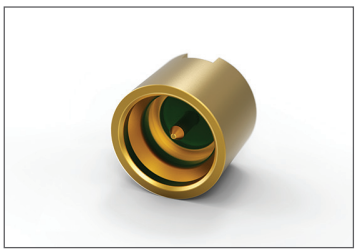
## Male Straight to PCB, Round Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S008-L93-03 | - | - | Full detent SI interface, alignment plug |
| S008-L93-03-T | - | - | Full detent SI interface, alignment plug, solder dipped |
| S008-L93-03-T@T13 | - | - | Full detent SI interface, alignment plug, solder dipped, on tape and reel |
| S008-L95-03 | - | - | Smooth bore XD interface, alignment plug |
| S008-L95-03-T | - | - | Smooth bore XD interface, alignment plug, solder dipped |
| S008-L9X-04-T[1] | - | - | Alignment plug, solder dipped |
| S012-T43-01 | - | - | Full detent SI interface |
| S012-T45-01 | - | - | Smooth bore XD interface |
| S012-T4X-02[1] | - | - | |

*Additional leg length, body styles, and packaging options for G4PO™ male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




S008-L9X-04-T



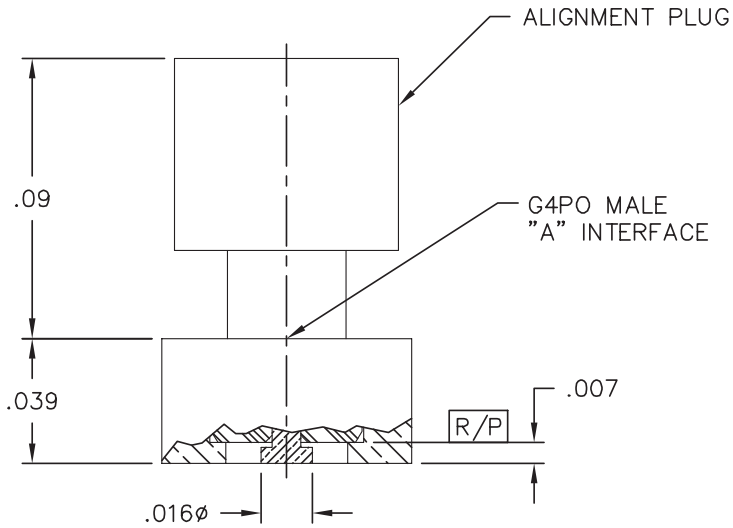
S008-L9X-04-T

# G4PO™ Vertical Launch PCB Mounts

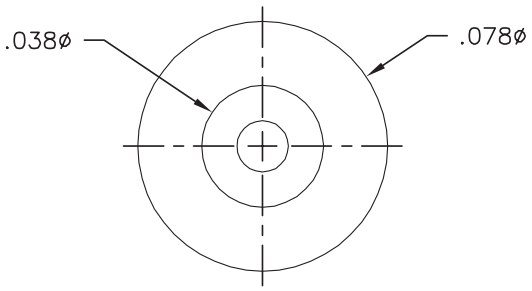
## Male Straight to PCB, Separate Center Conductor (C/C)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S012-T1X-01[1] | - | - | Alignment plug |

*Additional leg length, body styles, and packaging options for G4PO™ male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




S012-T1X-01



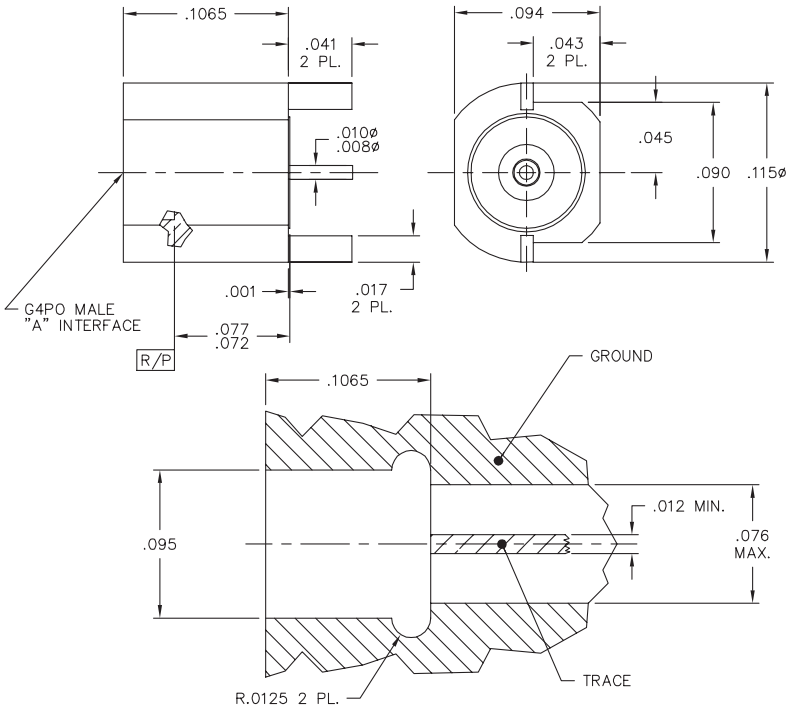

S012-T1X-01

# G4PO™ Edge Mounts

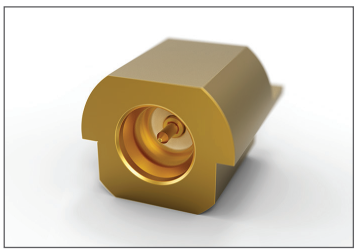
## Male Edge Flush-Mount

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S010-L1X-01[1] | - | - | |

*Additional body styles and packaging options for G4PO™ male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




S010-L1X-01



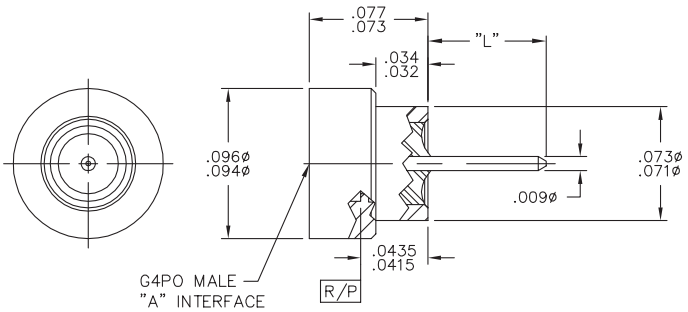
S010-L1X-01

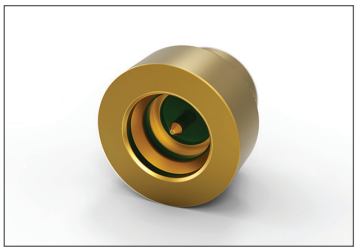
# G4PO™ Hermetic Shrouds

## Male Hermetic Shroud (Solder-In)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S007-L4X-02-TAB-R[1] | - | - | Pin lengths available from .025 to .075 in increments of .005 |

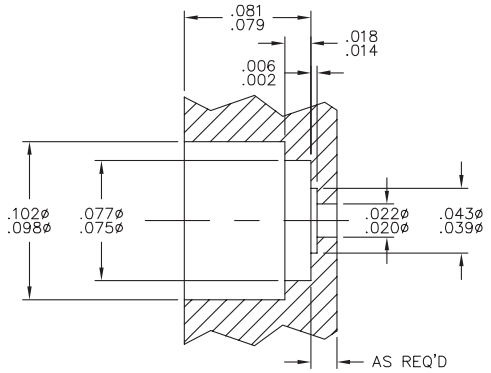
*Additional body styles and packaging options for G4PO™ shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



S007-L4X-02-TAB-R

RECOMMENDED
FLUSH SHROUD
MOUNTING HOLE



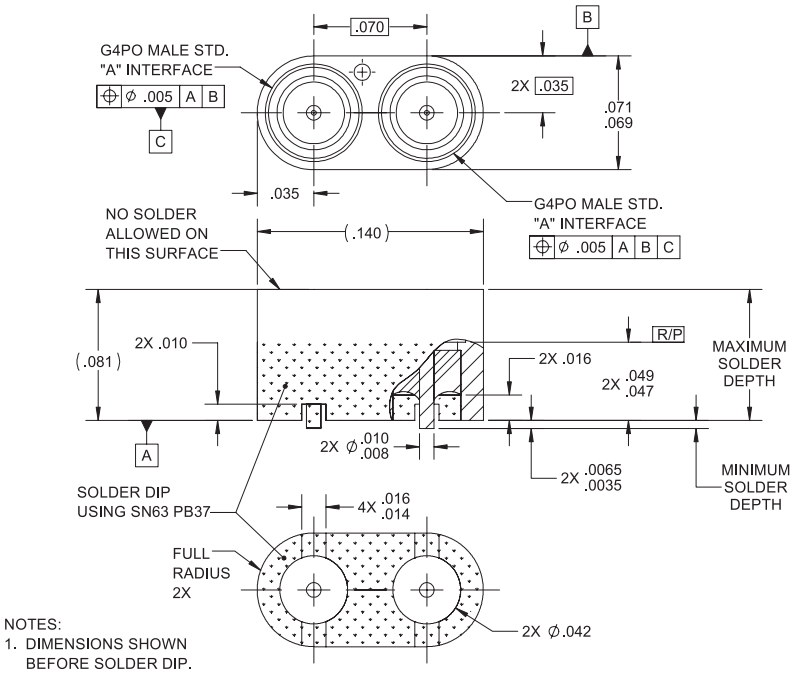

S007-L4X-02-TAB-R

# G4PO™ Multiposition Blocks

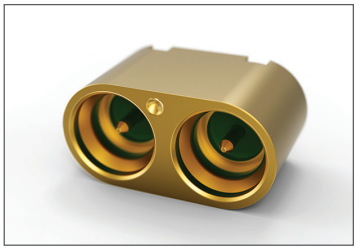
## Male Two-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S032-L4X-03-T[1] | - | - | .070 interface pitch, solder dipped |
| S032-L4X-05-T[1] | - | - | .070 interface pitch, solder dipped |
| S032-L93-01-T | - | - | G4PO SI full detent interface, .070 interface pitch, alignment plugs, solder dipped |

*Additional body styles and packaging options for G4PO™ multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




S032-L4X-05-T



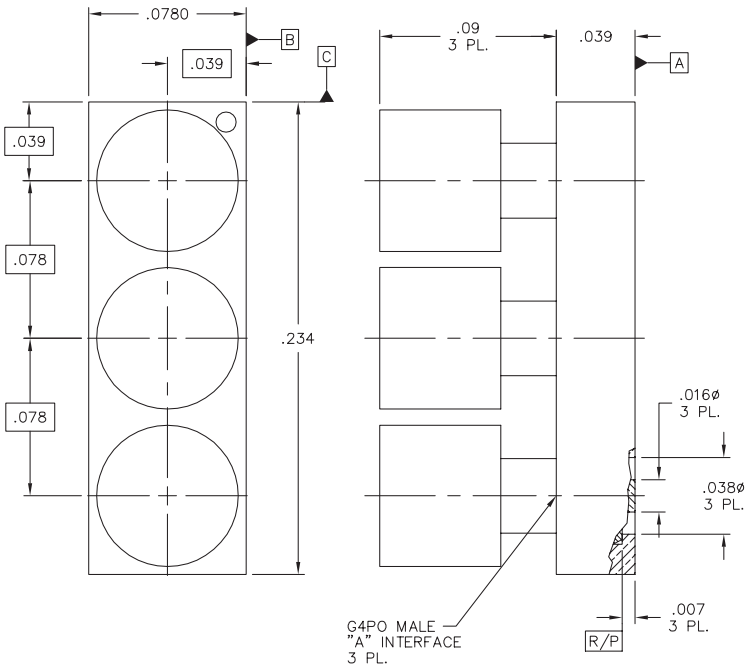
S032-L4X-05-T

# G4PO™ Multiposition Blocks

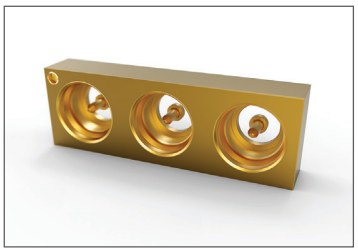
## Male Three-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S036-T1X-01[1] | - | - | .078 interface pitch, alignment plugs |
| S036-T1X-01@T13[1] | - | - | .078 interface pitch, alignment plug, on tape and reel |

*Additional body styles and packaging options for G4PO™ multiposition blocks are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




S036-T1X-01



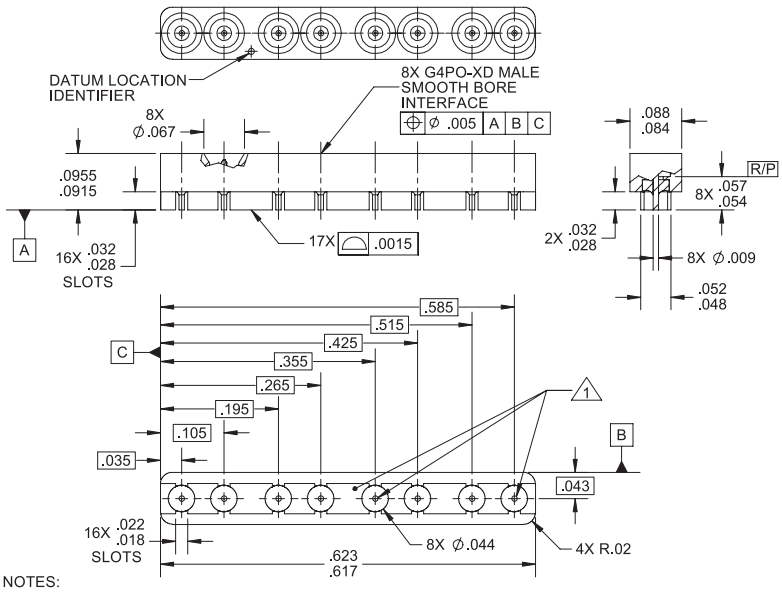
S036-T1X-01

# G4PO™ Multiposition Blocks

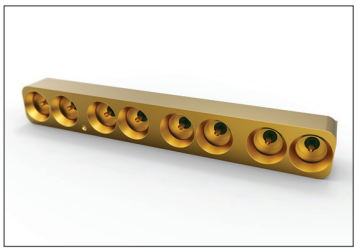
## Male Eight-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| S036-T45-14 | - | - | G4PO XD smooth bore interface, .067 interface pitch |

*Additional body styles and packaging options for G4PO™ multiposition blocks are available.




S036-T45-14



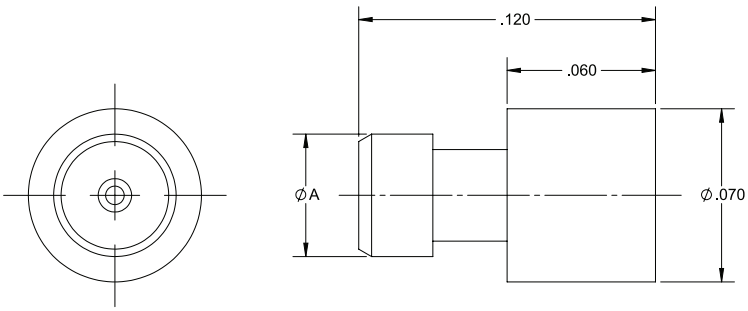
S036-T45-14

# G4PO™ Accessories

## Interface Plug (Alignment Plug)

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| Y072-A03-09 | - | - | Full detent |
| Y072-A05-09 | - | - | Smooth bore |

*Additional body styles and packaging options for G4PO™ accessories are available.

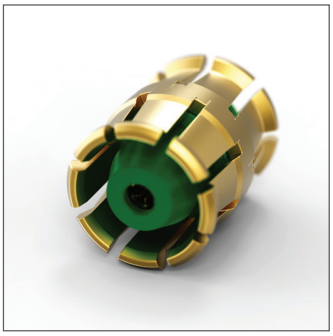



Y072-A03-09

Y072-A03-09

# Cryogenic Products

- Nonmagnetic products, commonly used in cryogenic applications
- Variety of connectors available, across multiple Corning product families
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change



# Cryogenic Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | See respective product families in previous sections for specifications. |
| **Frequency range** | |
| **Temperature range** | |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | See respective product families in previous sections for specifications. |
| **Insertion loss** | |
| **DWV @ sea level** | |
| **Insulation resistance** | |
| **Contact resistance** | |
| **Outer conductor** | |
| **Inner conductor** | |
| **RF leakage** | |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | See respective product families in previous sections for specifications. |
| **Force to engage/disengage** | |
| **Tolerated misalignment** | |
| **Radial** | |
| **Axial** | |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |

## Finish (typical)

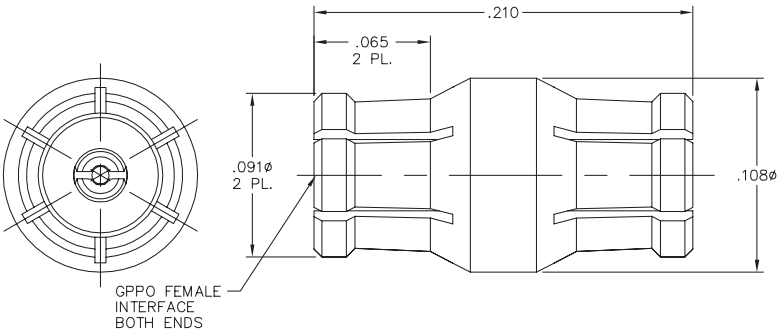
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over copper flash |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over copper flash |

# Cryogenic Blind Mate Interconnects

## Female Blind Mate Interconnect (Bullet) – Standard

| Catalog Number | Length (inches) | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|---|
| B1B1-0009-02 | .196 | B095-A99-01 | - | GPPO® |
| B1B1-0009-03 | .210 | B095-A99-01 | - | GPPO |
| R1R1-0009-05-0098 | .098 | R098-A99-02 | - | G3PO™ |
| R1R1-0009-04-0188 | .188 | R098-A99-02 | - | G3PO |

*Additional lengths available upon request.




NOTES:

1. NONMAGNETIC PLATING, THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.

B1B1-0009-03

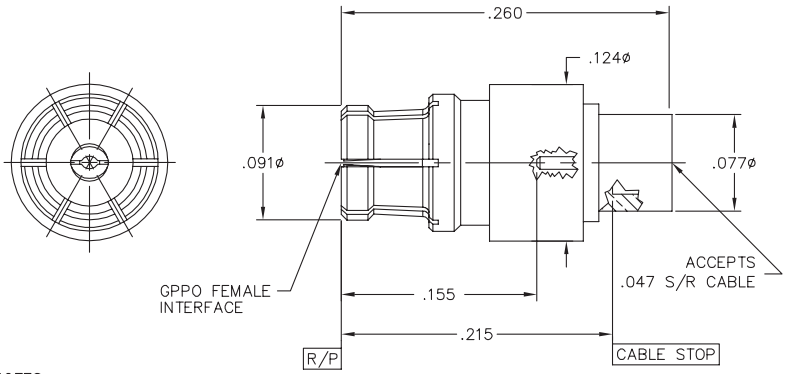
B1B1-0009-03

# Cryogenic .047 Cable Connectors

## Female Straight to .047 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-B91-01 | B096-A93-01, A096-A99-04, L096-A99-02, B098-A99-03 | AP01-133 | GPPO® |
| R014-B91-01 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-175 | G3PO™ |
| R014-B91-02 | R096-A95-01, A096-A99-04, L096-A99-02, R098-A99-01 | AP01-157 | G3PO |

*Flex cable can be substituted in place of .047 semirigid.




NOTES:
1. NONMAGNETIC PLATING. THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.

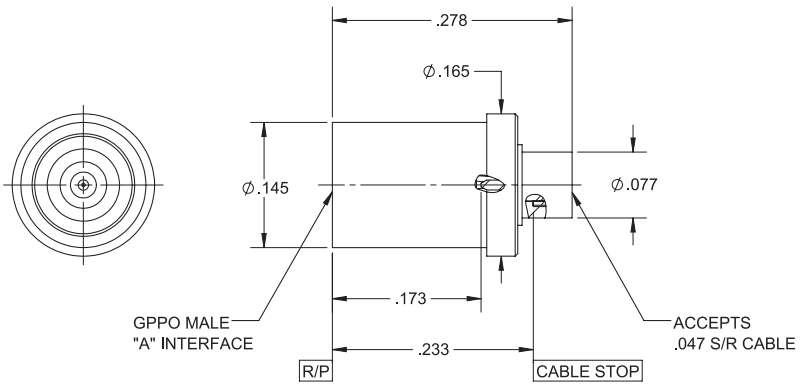
B014-B91-01

B014-B91-01

## Male Straight to .047 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-B9X-02[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-02, B098-A99-05 | AP01-094 | GPPO |
| R014-B9X-01[1] | R096-A23-01 (FD), R096-A25-01 (SB), A096-A99-04, L096-A99-02 | AP01-158 | G3PO |

*Flex cable can be substituted in place of .047 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B014-B9X-02

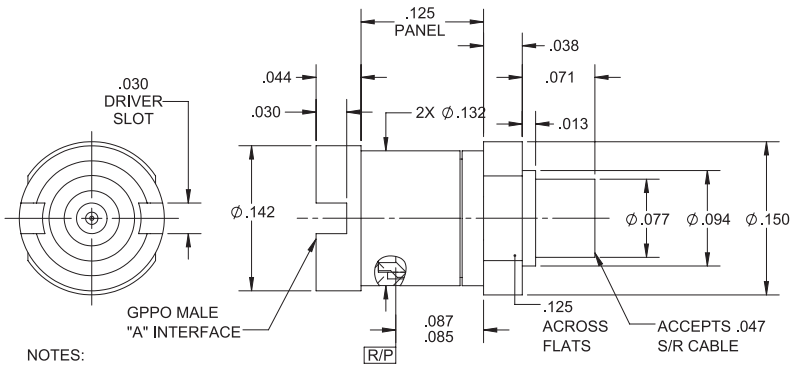
B014-B9X-02

# Cryogenic .047 Cable Connectors

## Male Bulkhead to .047 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-B9X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-02, B097-A99-01 | AP01-110 | GPPO® |

*Flex cable can be substituted in place of .047 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



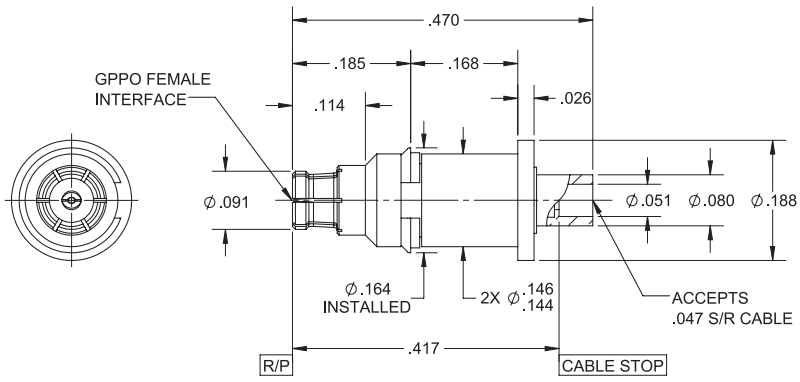

B016-B9X-01

B016-B9X-01

## Female Snap-In to .047 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B025-B91-01 | B096-A93-01, A096-A99-09, L096-A99-02, 9001-824-0 | AP01-103 | GPPO* |

*Flex cable can be substituted in place of .047 semirigid.




B025-B91-01

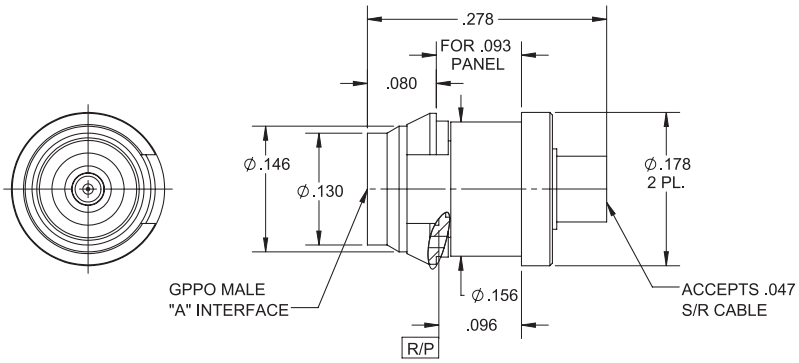
B025-B91-01

# Cryogenic .047 Cable Connectors

## Male Snap-In to .047 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-B9X-03[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-02, B098-A99-05 | AP01-094 | GPPO® |

*Flex cable can be substituted in place of .047 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B014-B9X-03

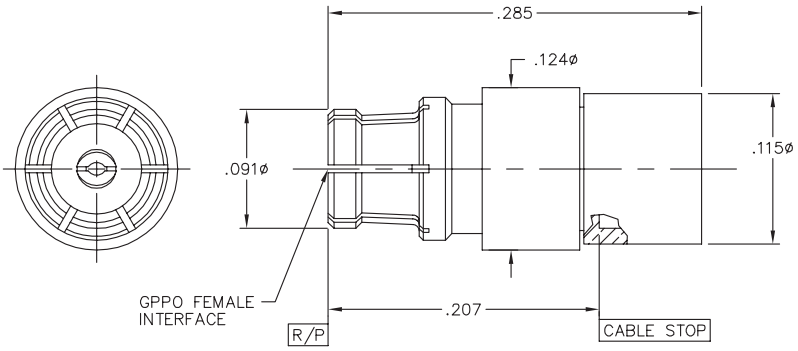
B014-B9X-03

# Cryogenic .086 Cable Connectors

## Female Straight to .086 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-D91-01 | B096-A93-01, A096-A99-04, L096-A99-01, B098-A99-03 | AP01-148 | GPPO® |

*Flex cable can be substituted in place of .086 semirigid.



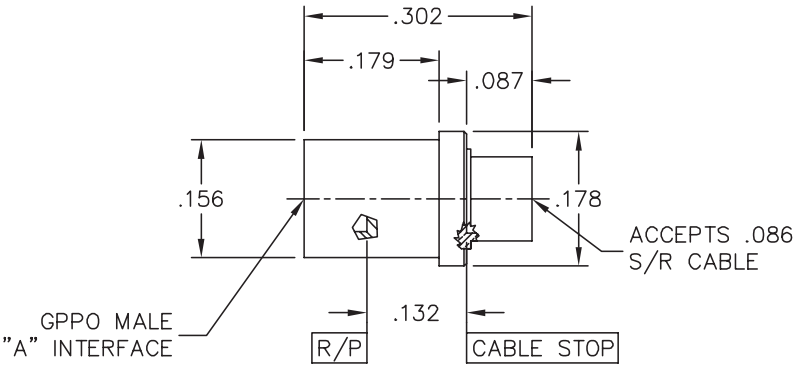

B014-D91-01

B014-D91-01

## Male Straight to .086 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-D9X-05[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-01 | - | GPPO |

*Flex cable can be substituted in place of .086 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B014-D9X-05

NOTES:
PART IS NONMAGNETIC. DO NOT UNDERPLATE WITH Ni. USE Cu.

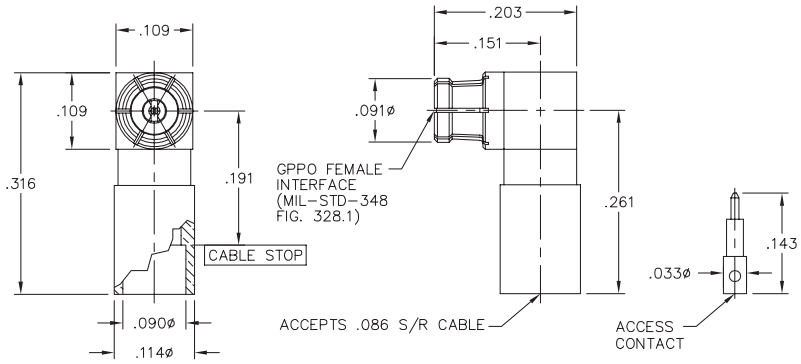
B014-D9X-05

# Cryogenic .086 Cable Connectors

## Female Right-Angle (R/A) to .086 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B015-D91-01 | B096-A93-01, A096-A99-10, L096-A99-01, B098-A99-07 | AP01-112 | GPPO® |

*Flex cable can be substituted in place of .086 semirigid.




NOTE:
PART IS NONMAGNETIC. DO NOT UNDERPLATE WITH Ni. USE Cu.

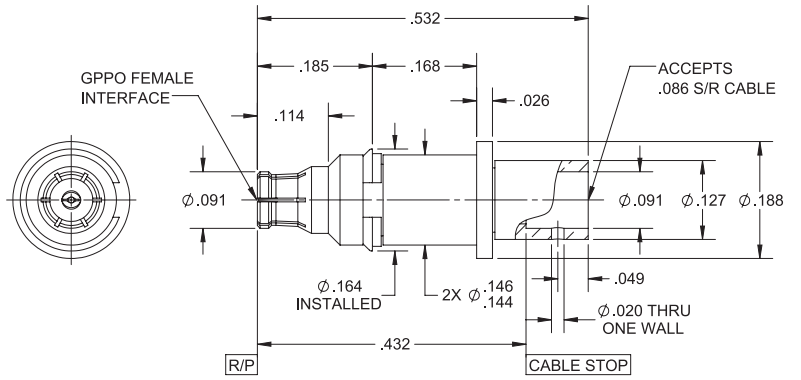
B015-D91-01

B015-D91-01

## Female Snap-In to .086 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B025-D91-01 | B096-A93-01, A096-A99-09, L096-A99-01, 9001-824-0 | - | GPPO |

*Flex cable can be substituted in place of .086 semirigid.




NOTES:
1. NONMAGNETIC PLATING. THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.
2. THIS CONNECTOR IS DESIGNED TO MATE WITH SK-5889.

B025-D91-01

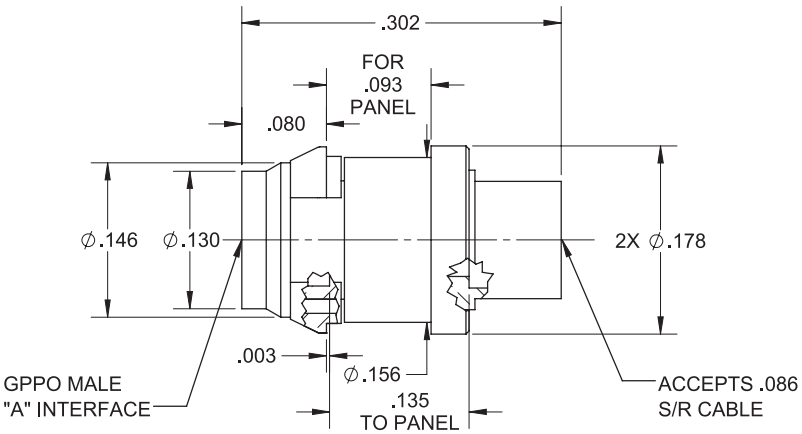
B025-D91-01

# Cryogenic .086 Cable Connectors

## Male Snap-In to .086 Semirigid (S/R) Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B025-D9X-01[1] | B096-A99-01, L096-A99-01 | AP01-087 | GPPO® |

*Flex cable can be substituted in place of .086 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B025-D9X-01

NOTES:
1. PART IS NONMAGNETIC. NOT TO BE USED IN STANDARD APPLICATIONS.

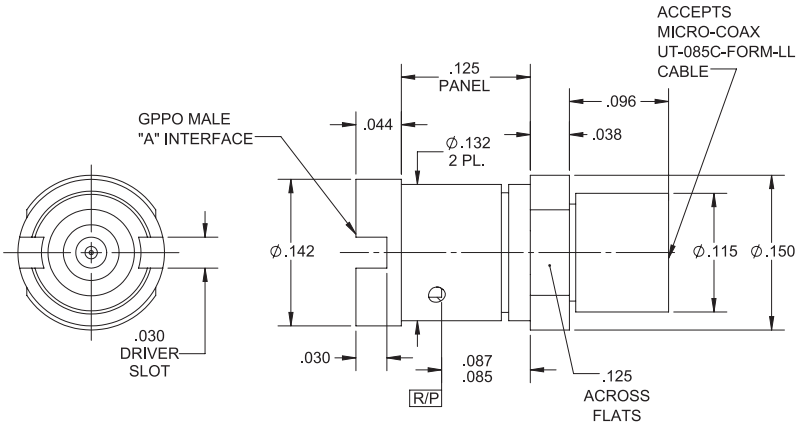
B025-D9X-01

# Cryogenic Micro-Coax UT-085C-FORM-LL Cable Connectors

## Male Bulkhead to Micro-Coax UT-085C-FORM-LL Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B016-K9X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB), L096-A99-01, B097-A99-01 | AP01-111 | GPPO® |

*Flex cable can be substituted in place of .086 semirigid.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



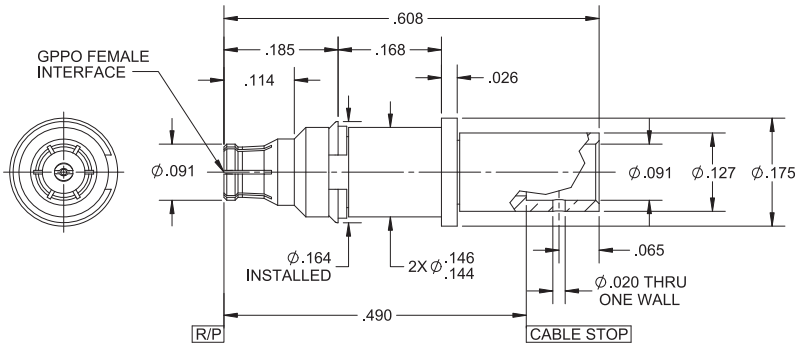

B016-K9X-01

B016-K9X-01

## Female Snap-In to Micro-Coax UT-085C-FORM-LL Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B025-K91-01 | B096-A93-01, A096-A99-09, L096-A99-01, 9001-824-0 | - | GPPO |

*Flex cable can be substituted in place of .086 semirigid.




NONMAGNETIC PLATING. THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.

B025-K91-01

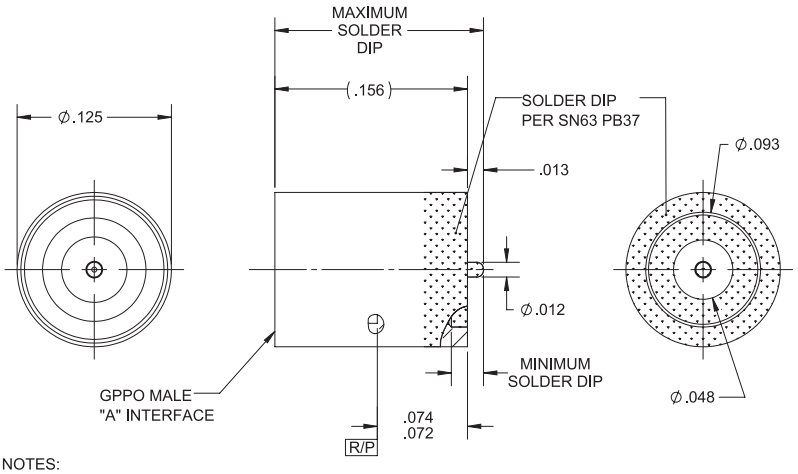
B025-K91-01

# Cryogenic Vertical-Launch PCB Mounts

## Male Straight to PCB, Round Body

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B012-L9X-04-T[1] | - | - | GPPO®, solder dipped |
| B012-L9X-05-T[1] | - | - | GPPO, solder dipped |
| R008-L95-01 | - | - | G3PO™-SI smooth bore interface |
| R008-L95-01-T | - | - | G3PO-SI smooth bore interface, solder dipped |

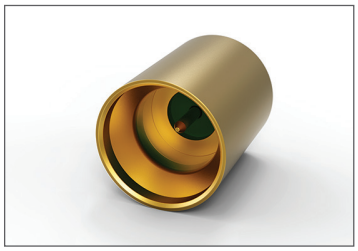
*Additional leg length, body styles, and packaging options for cryogenic male straight to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




NOTES:

1. NONMAGNETIC PLATING. THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.
2. ALL DIMENSIONS APPLY BEFORE SOLDER DIP.

B012-L9X-04-T



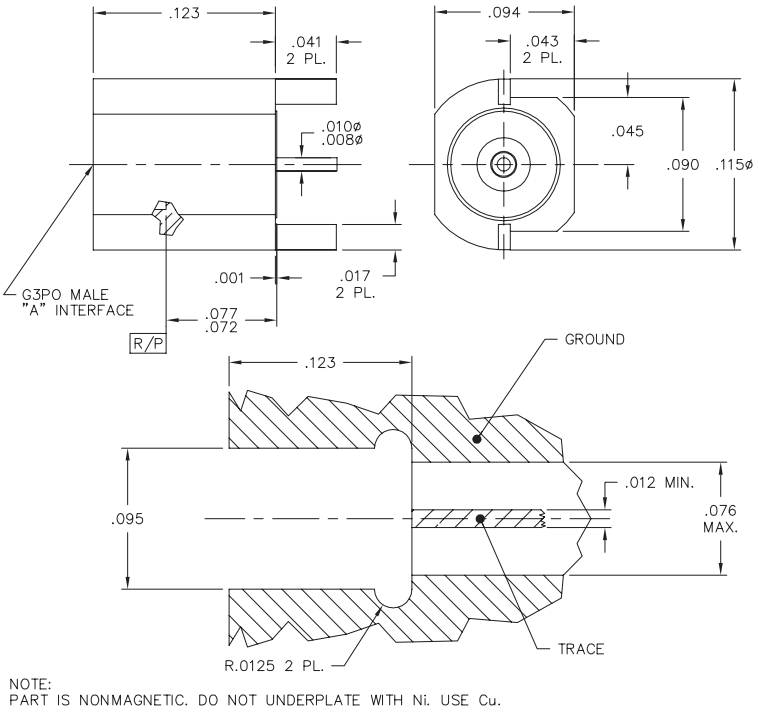
B012-L9X-04-T

# Cryogenic Edge Mounts

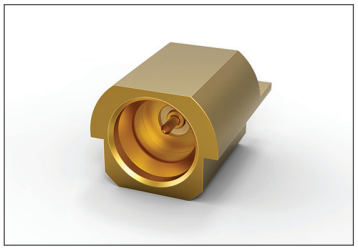
## Male Edge Mount, Standard

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R010-L9X-02[1] | - | - | G3PO™ |

*Additional body styles and packaging options for cryogenic male edge-mount to PCB connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




R010-L9X-02

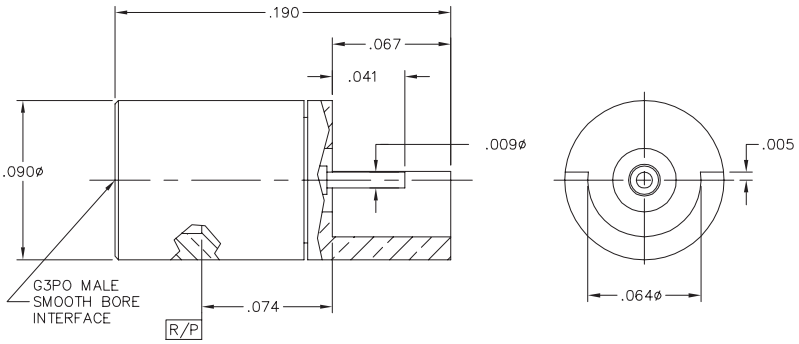


R010-L9X-02

## Male Edge Mount, Non-Standard

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R010-L95-01 | - | - | G3PO smooth bore |

*Additional body styles and packaging options for cryogenic male edge-mount to PCB connectors are available.




R010-L95-01

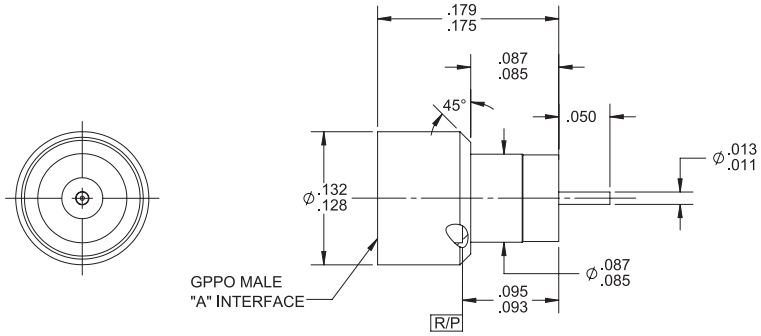
R010-L95-01

# Cryogenic Solder-In Shrouds

## Male Solder-In Shroud

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B026-L9X-01[1] | B096-A99-01 (FD), B096-A99-02 (SB) | - | |

*Additional body styles and packaging options for cryogenic shroud connectors are available.
[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




B026-L9X-01

NONMAGNETIC PLATING. THIS CONNECTOR IS NOT TO BE USED IN STANDARD APPLICATIONS.

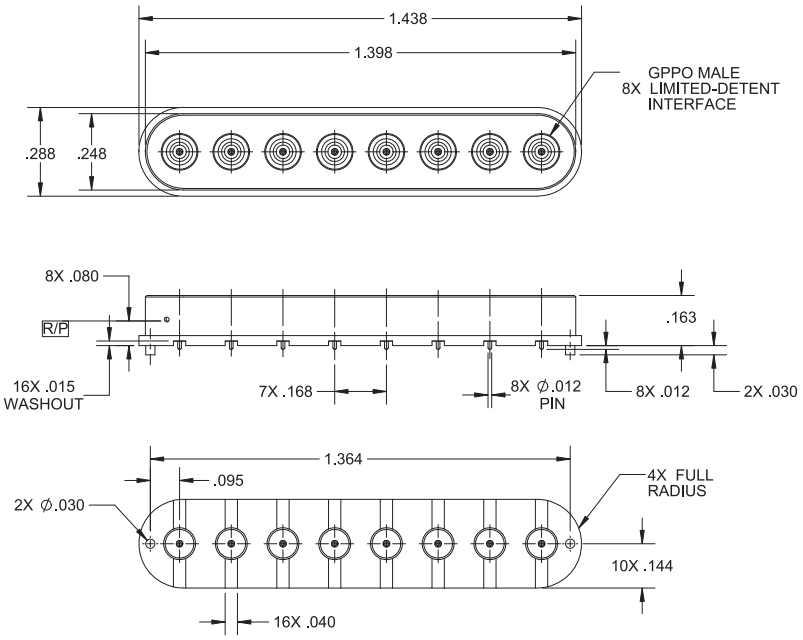
B026-L9X-01

# Cryogenic Multiposition Blocks

## Eight-Position Block

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B032-L94-07 | - | - | GPPO® |

*Additional body styles and packaging options for cryogenic multiposition blocks are available.




B032-L94-07

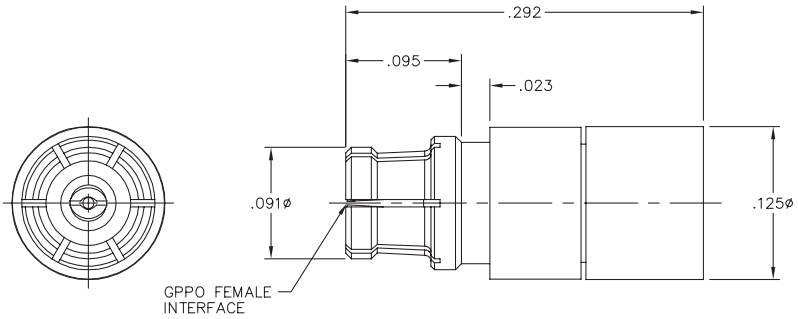
B032-L94-07

# Cryogenic Accessories

## Female Short

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B055-A91-01 | B098-A99-03 | - | GPPO® |

*Additional body styles and packaging options for cryogenic accessories are available.




B055-A91-01

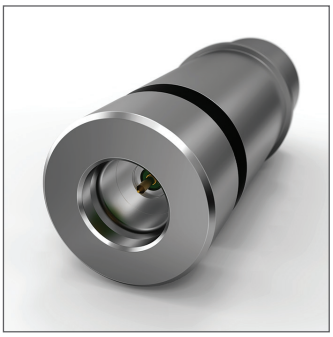
NOTES:

1. NONMAGNETIC PLATING. THIS SHORT IS NOT TO BE USED IN STANDARD APPLICATIONS.

B055-A91-01

# MIL-DTL-38999 Products

- Outer package designed to meet 38999 MIL specifications
- Variety of connectors available, across multiple Corning product families
- Designed to accommodate both radial and axial misalignment with negligible voltage standing wave radio (VSWR) change



# 38999 Specifications

## General Characteristics

| | |
|---|---|
| **Impedance** | See respective product families in previous sections for specifications. |
| **Frequency range** | |
| **Temperature range** | |

## Electrical Characteristics

| | |
|---|---|
| **VSWR** | See respective product families in previous sections for specifications. |
| **Insertion loss** | |
| **DWV @ sea level** | |
| **Insulation resistance** | |
| **Contact resistance** | |
| **Outer conductor** | |
| **Inner conductor** | |
| **RF leakage** | |

## Mechanical Characteristics

| | |
|---|---|
| **Mate/demate cycles** | See respective product families in previous sections for specifications. |
| **Force to engage/disengage** | |
| **Tolerated misalignment** | |
| **Radial** | |
| **Axial** | |

## Environmental Characteristics

| | |
|---|---|
| **Thermal shock** | MIL-STD-202, Method 107, Condition B |
| **Salt spray** | MIL-STD-202, Method 101 |
| **Vibration** | MIL-STD-202, Method 204 |
| **Shock** | MIL-STD-202, Method 213, Condition I |
| **Moisture resistance** | MIL-STD-202, Method 106, except Step 7B |

## Materials (typical)

| | |
|---|---|
| **Bodies** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Outer contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Center contacts** | Beryllium copper per ASTM B196 and or/ASTM B197 |
| **Insulators** | PTFE fluorocarbon per ASTM D1710 |

## Finish (typical)

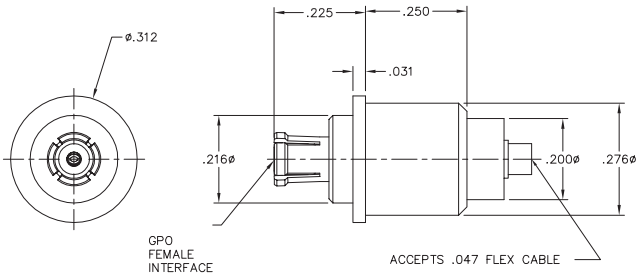
| | |
|---|---|
| **Bodies** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |
| **Contacts** | Gold plated per MIL-DTL-45204, Type I, Grade C, Class 1, over nickel plate per SAE AMS-QQ-N-290 |

# MIL-DTL-38999 .047 Cable Connectors

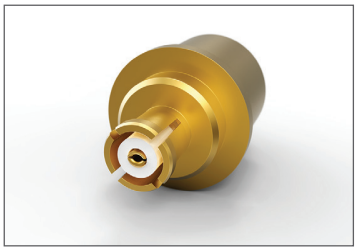
## Size No. 10, GPO® to .047 Flex Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-B11-03 | - | - | GPO® female |
| A014-B95-01 | - | - | GPO male |

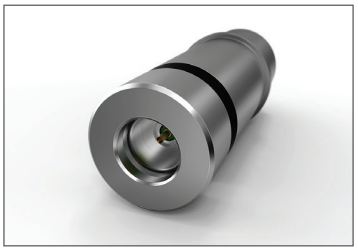
*Additional cable options for size no. 10, GPO 38999 connectors are available.



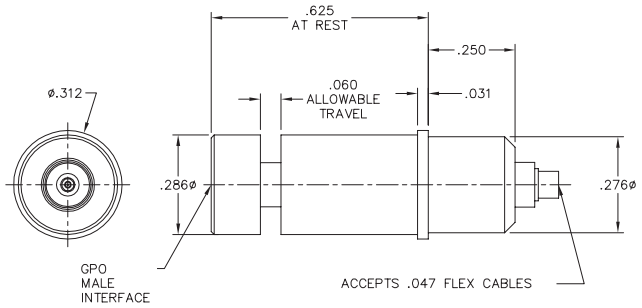

A014-B11-03



A014-B11-03



A014-B95-01



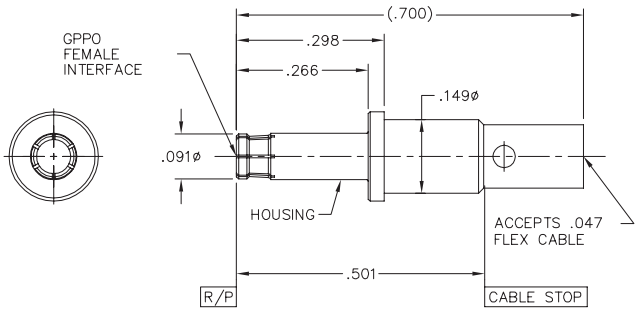

A014-B95-01

# MIL-DTL-38999 .047 Cable Connectors

## Size No. 12, GPPO® to .047 Flex Cable

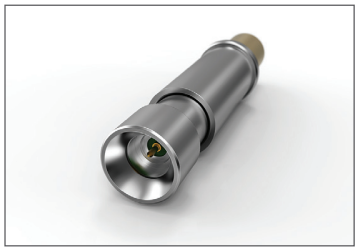
| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-B11-02 | - | - | GPPO® female |
| B014-B95-01 | - | - | GPPO male |

*Additional cable options for size no. 12, GPPO 38999 connectors are available.

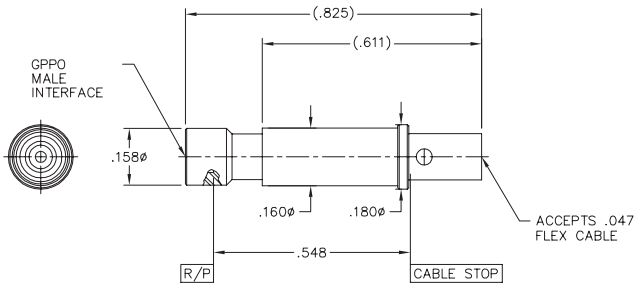



B014-B11-02

B014-B11-02



B014-B95-01



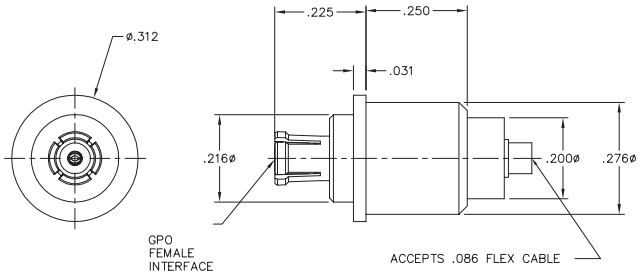

B014-B95-01

# MIL-DTL-38999 .086 Cable Connectors

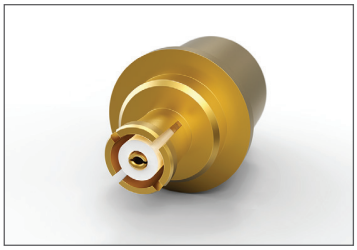
## Size No. 10, GPO® to .086 Flex Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-D11-05 | - | - | GPO® female |
| A014-D95-01 | - | - | GPO male |

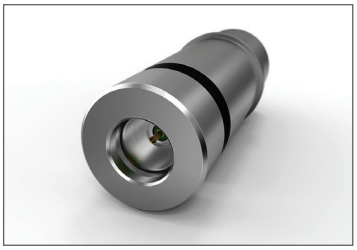
*Additional cable options for size no. 10, GPO 38999 connectors are available.



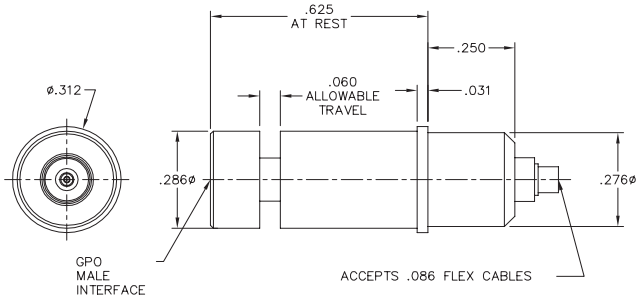

A014-D11-05



A014-D11-05



A014-D95-01



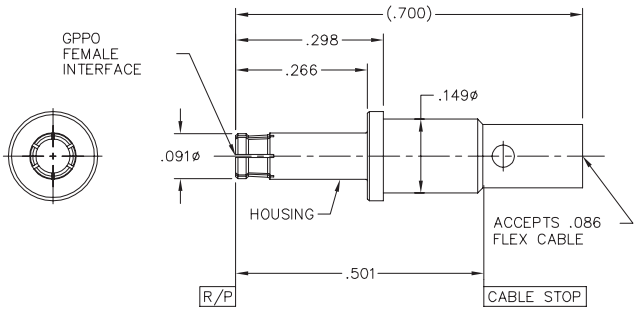

A014-D95-01

# MIL-DTL-38999 .086 Cable Connectors

## Size No. 12, GPPO® to .086 Flex Cable

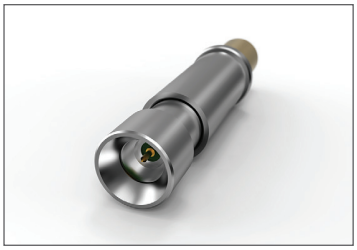
| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-D11-02 | - | - | GPPO® female |
| B014-D95-01 | - | - | GPPO male |

*Additional cable options for size no. 12, GPPO 38999 connectors are available.

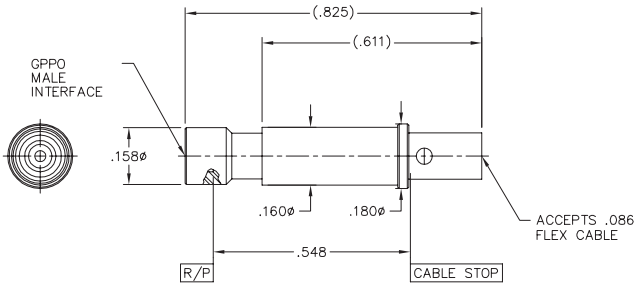



B014-D11-02

B014-D11-02



B014-D95-01



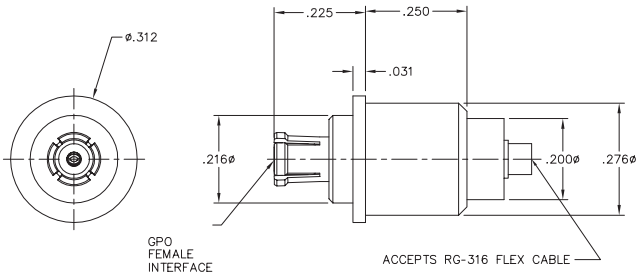

B014-D95-01

# MIL-DTL-38999 RG-316 Cable Connectors

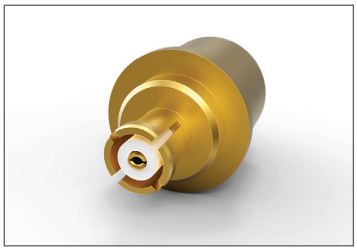
## Size No. 10, GPO® to RG-316 Flex Cable

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A014-F11-03 | - | - | GPO® female |
| A014-F95-01 | - | - | GPO male |

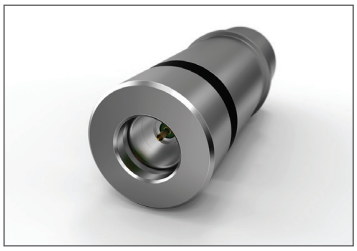
*Additional cable options for size no. 10, GPO 38999 connectors are available.



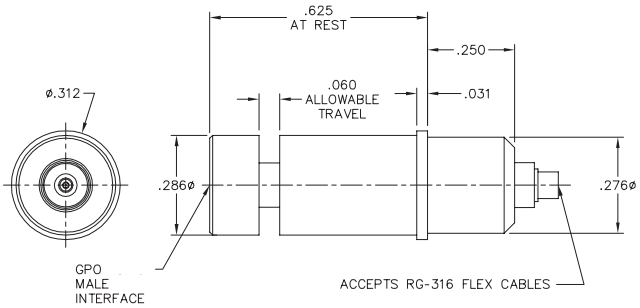

A014-F11-03



A014-F11-03



A014-F95-01



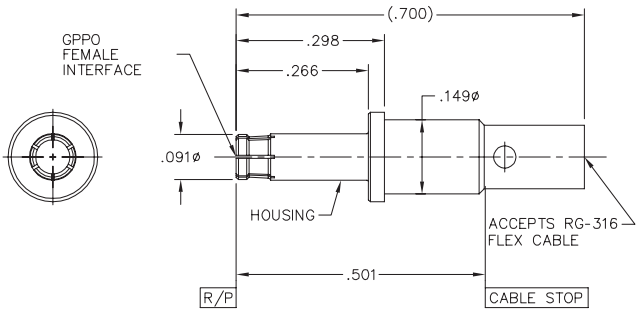

A014-F95-01

# MIL-DTL-38999 RG-316 Cable Connectors

## Size No. 12, GPPO® to RG-316 Flex Cable

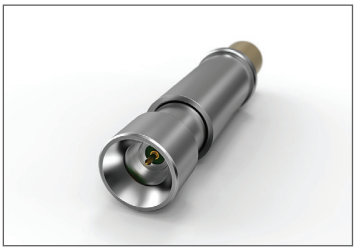
| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| B014-F11-01 | - | - | GPPO® female |
| B014-F95-01 | - | - | GPPO male |

*Additional cable options for size no. 12, GPPO 38999 connectors are available.

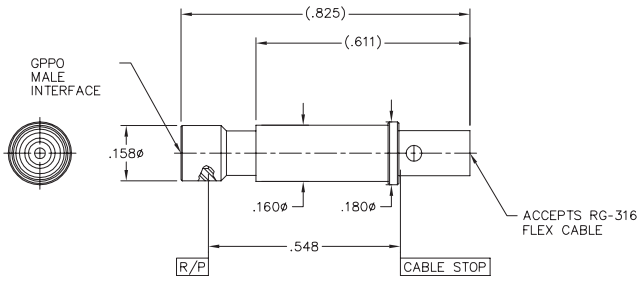



B014-F11-01

B014-F11-01



B014-F95-01




B014-F95-01

# Adapters

# Adapter Matrix

The chart listed below is designed to aid in locating the appropriate adapter by application. All adapters can be found in this catalog.

## GPO® (female)

| | |
|---|---|
| **2.4 mm (jack)** | 1A1C1-0521-01 |
| **2.4 mm (plug)** | 1A1C2-0521-01 |
| **2.92 mm (jack)** | 1A1D1-0501-01 |
| **2.92 mm (plug)** | 1A1D2-0501-01 |
| **SMA (jack)** | 1A1F1-0503-01 |
| **SMA (plug)** | 1A1F2-0503-01 |
| **GPO® (female)** | GPO bullets |
| **GPO (male)** | A1AX-0503-01 |
| **GPPO® (female)** | 1B1A1-0501-02 |

## GPO (male)

| | |
|---|---|
| **2.4 mm (jack)** | 1AXC1-0503-01 |
| **2.4 mm (plug)** | 1AXC2-0503-01 |
| **2.92 mm (jack)** | 1AXD1-0503-01 |
| **2.92 mm (plug)** | 1AXD2-0503-01 |
| **SMA (jack)** | 1AXF1-0503-01 |
| **SMA (plug)** | 1AXF2-0503-01 |
| **GPO (male)** | AXAX-0523-03 |

## GPPO® (female)

| | |
|---|---|
| **1.85 mm (jack)** | 1B1M1-0509-01 |
| **1.85 mm (plug)** | 1B1M2-0509-01 |
| **2.4 mm (jack)** | 1B1C1-0501-01 |
| **2.4 mm (plug)** | 1B1C2-0501-01 |
| **2.92 mm (jack)** | 1B1D1-0503-01 |
| **SMA (jack)** | 1B1F1-0503-01 |
| **SMA (plug)** | 1B1F2-0503-01 |
| **GPO (female)** | 1B1A1-1509-01 |
| **GPO (male)** | 1B1A3-0541-01 |
| **GPPO® (female)** | GPPO bullets |

## GPPO (male)

| | |
|---|---|
| **1.85 mm (jack)** | 1BXM1-0509-01 |
| **1.85 mm (plug)** | 1BXM2-0509-01 |
| **2.4 mm (jack)** | 1BXC1-0503-01 |
| **2.4 mm (plug)** | 1BXC2-0503-01 |
| **2.92 mm (jack)** | 1BXD1-0503-01 |
| **2.92 mm (plug)** | 1BXD2-0503-01 |
| **SMA (jack)** | 1BXF1-0503-01 |
| **SMA (plug)** | 1BXF2-0503-01 |
| **GPPO (male)** | BXBX-0523-02 |

## G3PO™ (female)

| | |
|---|---|
| **1.85 mm (jack)** | 1R1M1-0509-01 |
| **1.85 mm (plug)** | 1R1M2-0509-01 |
| **2.4 mm (jack)** | 1R1C1-0501-01 |
| **2.92 mm (jack)** | 1R1D1-0503-01 |
| **SMA (jack)** | 1R1F1-0503-01 |
| **G3PO™ (female)** | G3PO bullets |

## G3PO (male)

| | |
|---|---|
| **1.85 mm (jack)** | 1RXM1-0503-01 |
| **1.85 mm (plug)** | 1RXM2-0503-01 |
| **2.4 mm (jack)** | 1RXC1-0503-01 |
| **2.92 mm (jack)** | 1RXD1-0503-01 |
| **2.92 mm (plug)** | 1RXD2-0503-01 |
| **SMA (jack)** | 1RXF1-0509-01 |
| **SMA (plug)** | 1RXF2-0503-01 |
| **G3PO (female)** | R1R5-0501-01 |

## G4PO™ (female)

| | |
|---|---|
| **G4PO™ (female)** | G4PO bullets |

## G4PO (male)

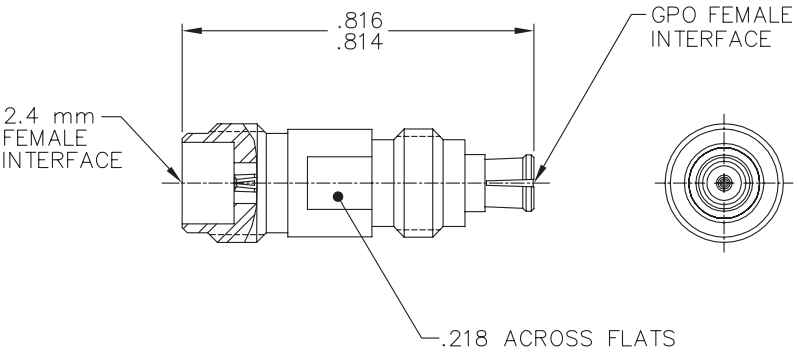
| | |
|---|---|
| **1.85 mm (jack)** | 1SXM1-0503-01 |
| **2.92 mm (plug)** | 1SXD2-0503-01 |

*Note: The X listed in part numbers refers to a tabulated detent. Replace the X with 3 for full detent, 4 for limited detent (when available), or 5 for smooth bore.
† Male = plug, female = jack
‡1.85 mm adapters supersede 2.4 mm adapters with better performance.
§2.92 mm adapters supersede 3.5 mm and SMA adapters with better performance.

# GPO® Female Adapters

## GPO® Female to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1C1-0521-01 | - | - | |

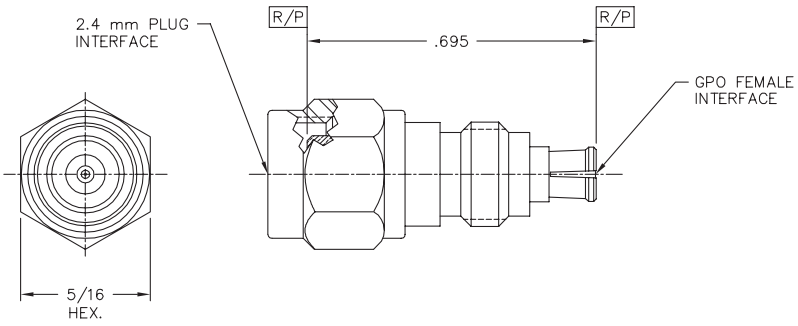



1A1C1-0521-01

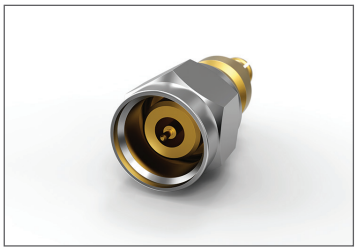
1A1C1-0521-01

## GPO Female to 2.4 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1C2-0521-01 | - | - | |




1A1C2-0521-01

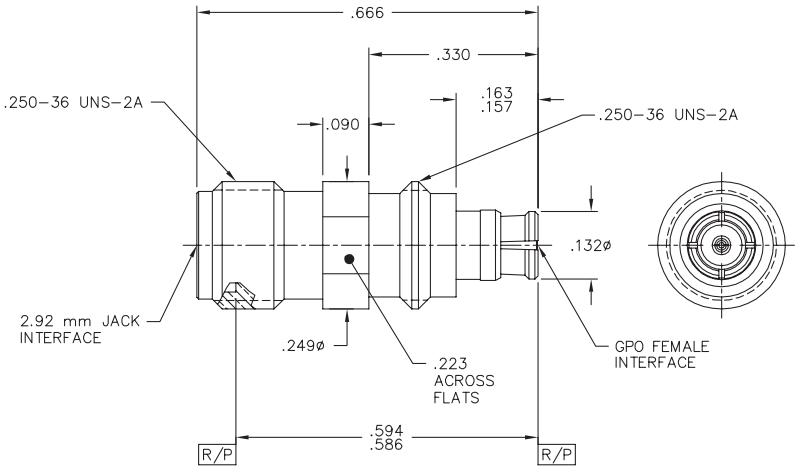


1A1C2-0521-01

# GPO® Female Adapters

## GPO® Female to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1D1-0501-01 | - | - | |

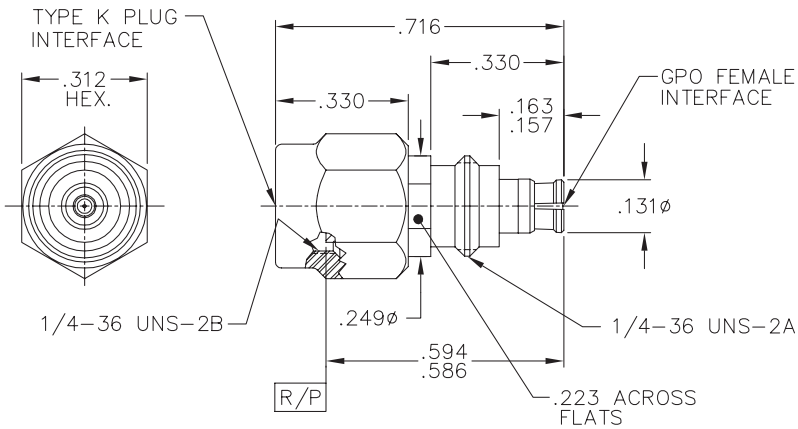



1A1D1-0501-01

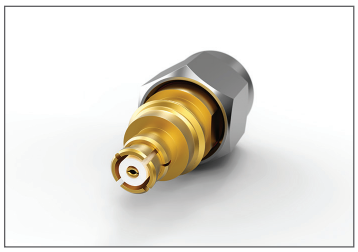
1A1D1-0501-01

## GPO Female to 2.92 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1D2-0501-01 | - | - | |




1A1D2-0501-01

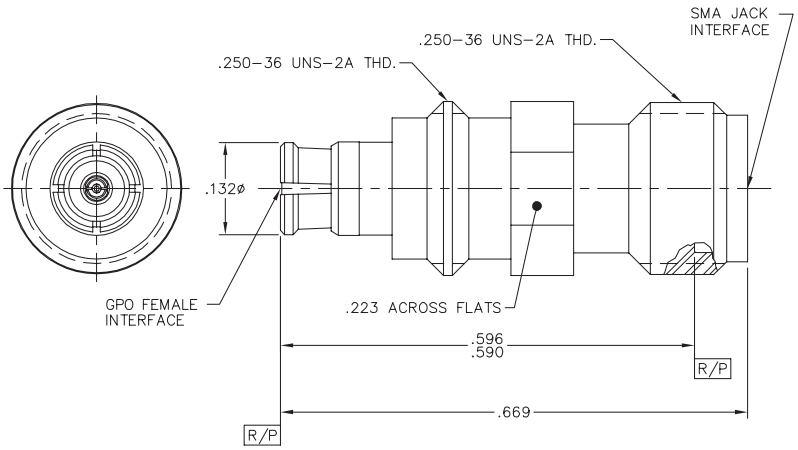


1A1D2-0501-01

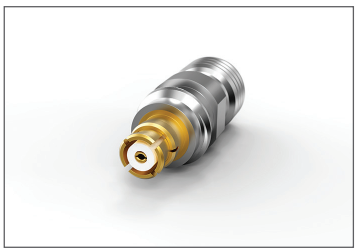
# GPO® Female Adapters

## GPO® Female to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1F1-0503-01 | - | - | |



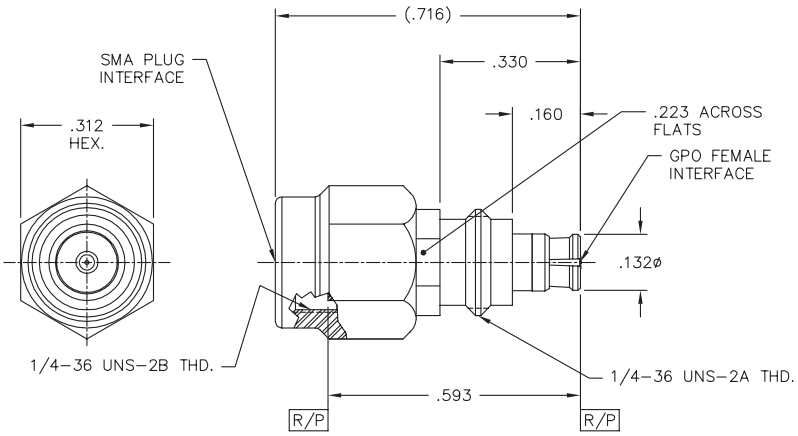

1A1F1-0503-01



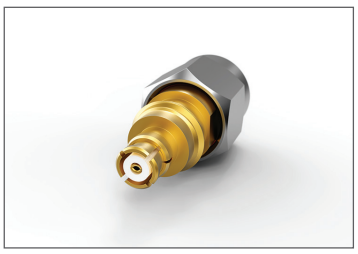
1A1F1-0503-01

## GPO Female to SMA Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1A1F2-0503-01 | - | - | |




1A1F2-0503-01



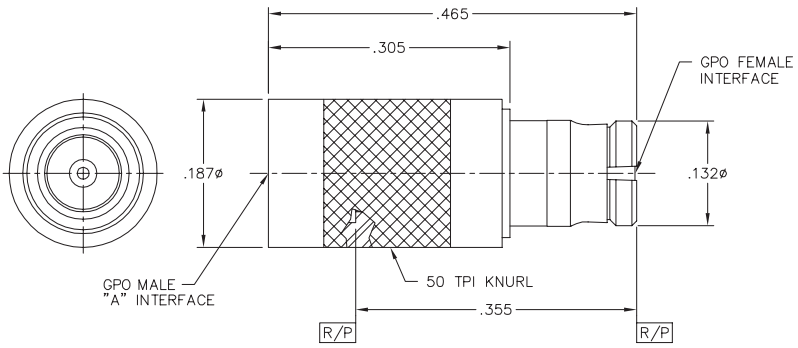
1A1F2-0503-01

# GPO® Female Adapters

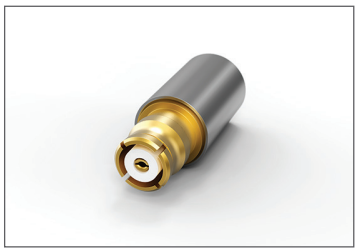
## GPO® Female to GPO Male Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| A1AX-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



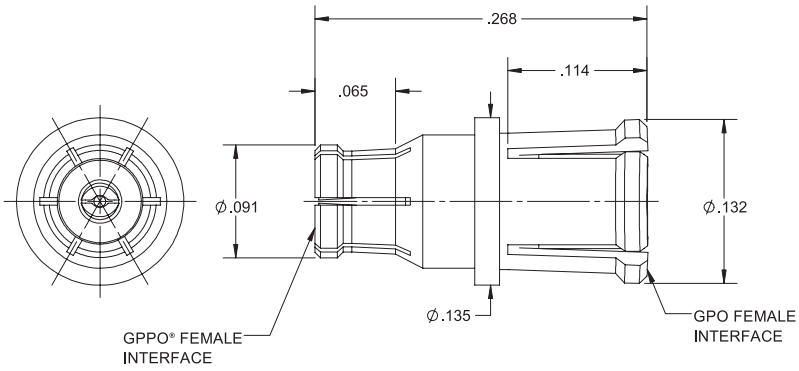

A1AX-0503-01



A1AX-0503-01

## GPO Female to GPPO® Female Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1A1-0501-02 | - | - | |




1B1A1-0501-02

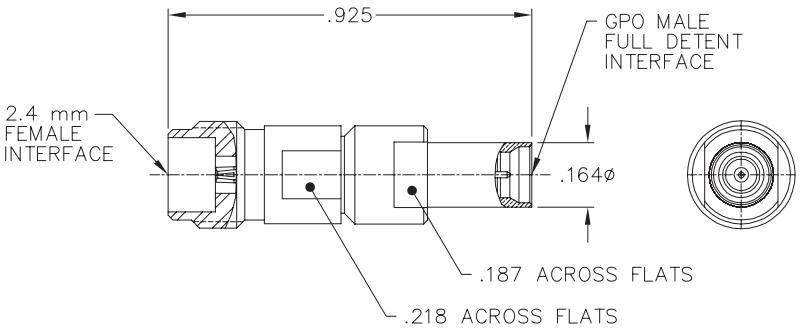
1B1A1-0501-02

# GPO® Male Adapters

## GPO® Male to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXC1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



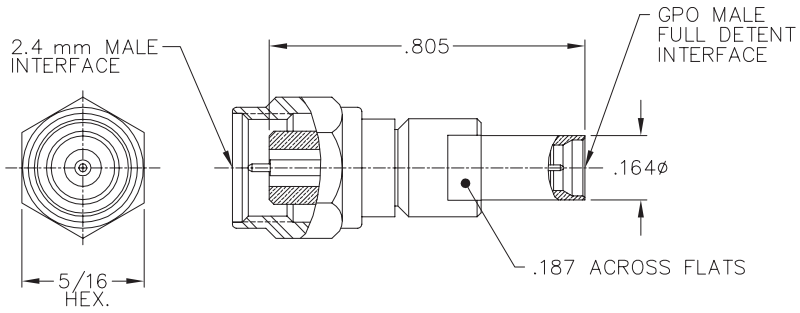

1AXC1-0503-01

1AXC1-0503-01

## GPO Male to 2.4 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXC2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1AXC2-0503-01

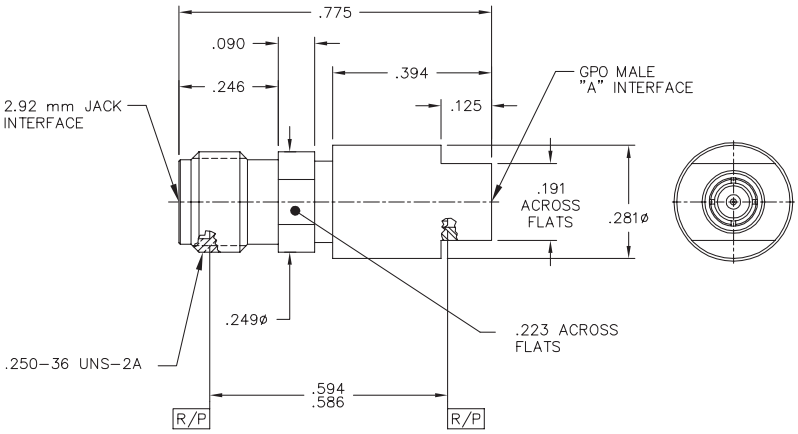
1AXC2-0503-01

# GPO® Male Adapters

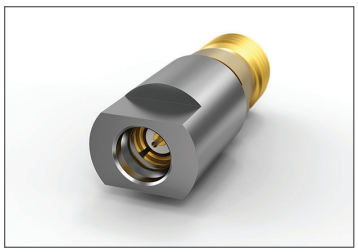
## GPO® Male to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXD1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1AXD1-0503-01

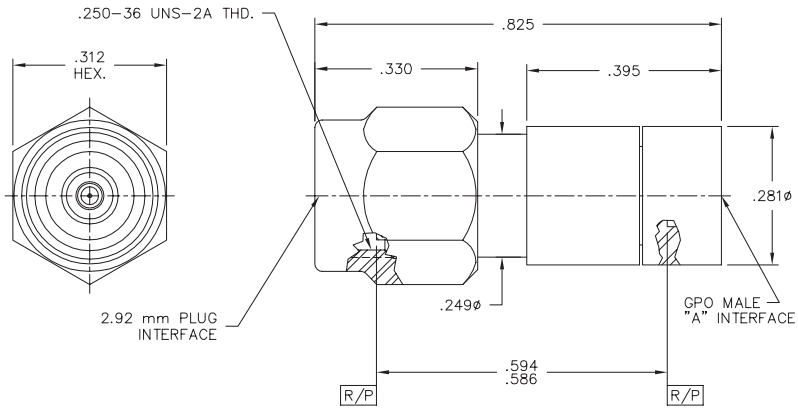


1AXD1-0503-01

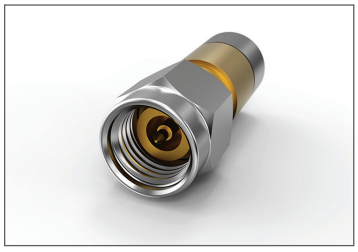
## GPO Male to 2.92 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXD2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1AXD2-0503-01



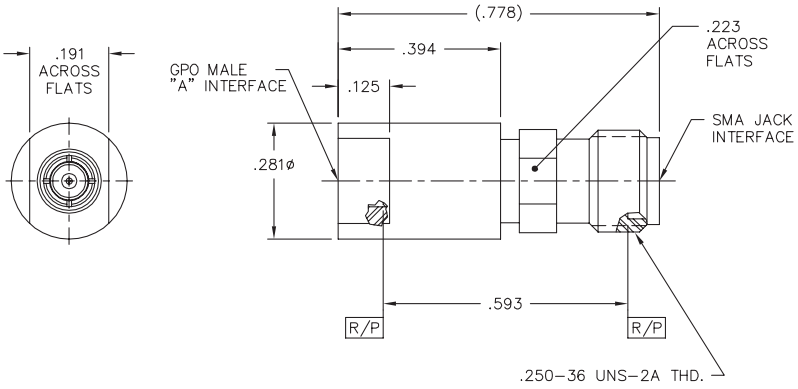
1AXD2-0503-01

# GPO® Male Adapters

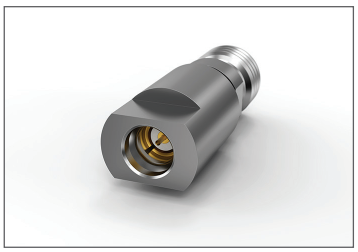
## GPO® Male to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXF1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1AXF1-0503-01

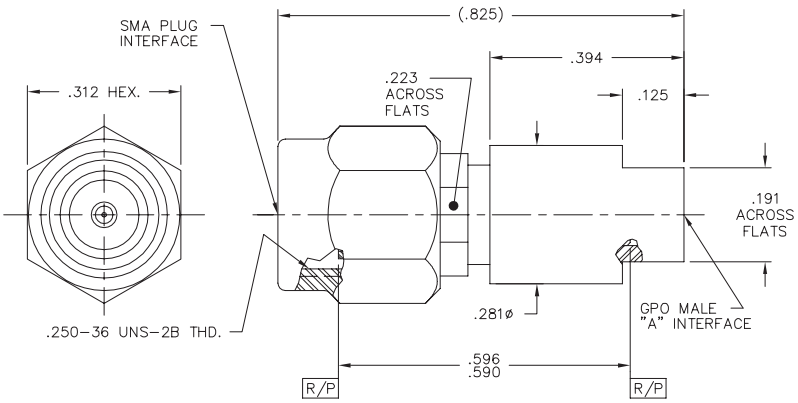


1AXF1-0503-01

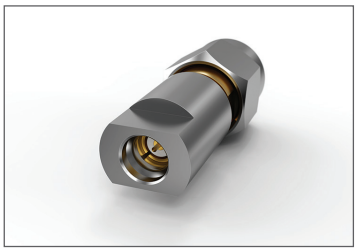
## GPO Male to SMA Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1AXF2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1AXF2-0503-01



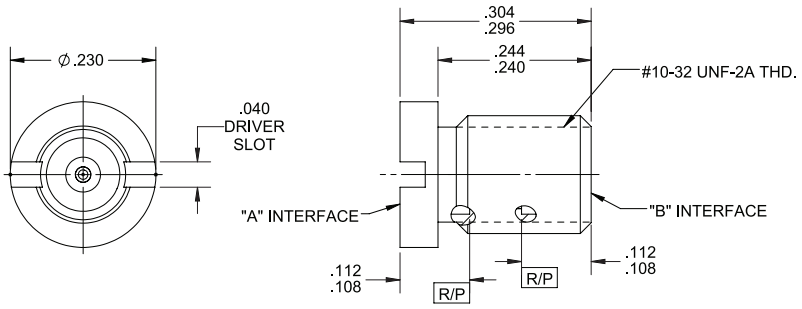
1AXF2-0503-01

# GPO® Male Adapters

## GPO® Male to GPO Male Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| AXAX-0523-03[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



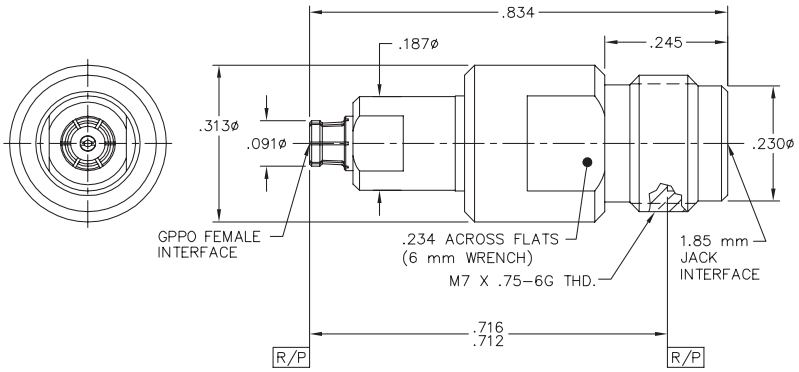

AXAX-0523-03

AXAX-0523-03

# GPPO® Female Adapters

## GPPO® Female to 1.85 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1M1-0509-01 | - | - | |

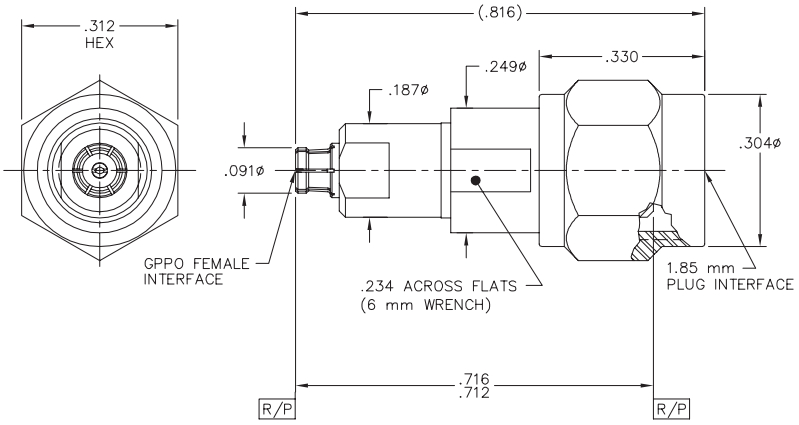



1B1M1-0509-01

1B1M1-0509-01

## GPPO Female to 1.85 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1M2-0509-01 | - | - | |



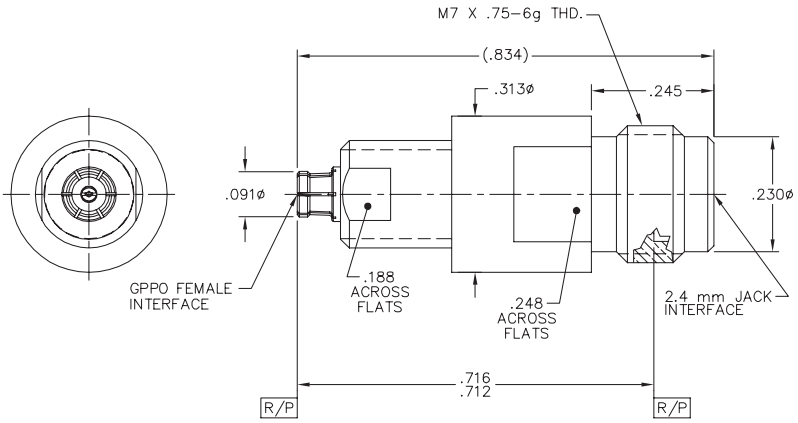

1B1M2-0509-01

1B1M2-0509-01

# GPPO® Female Adapters

## GPPO® Female to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1C1-0501-01 | - | - | |

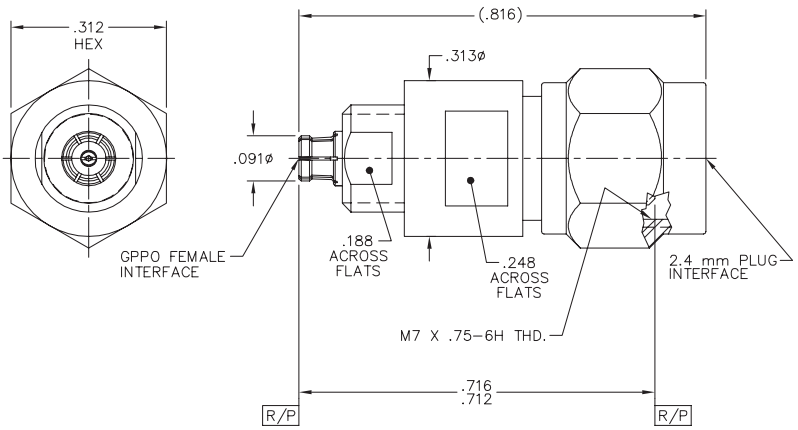



1B1C1-0501-01

1B1C1-0501-01

## GPO Female to 2.4 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1C2-0501-01 | - | - | |



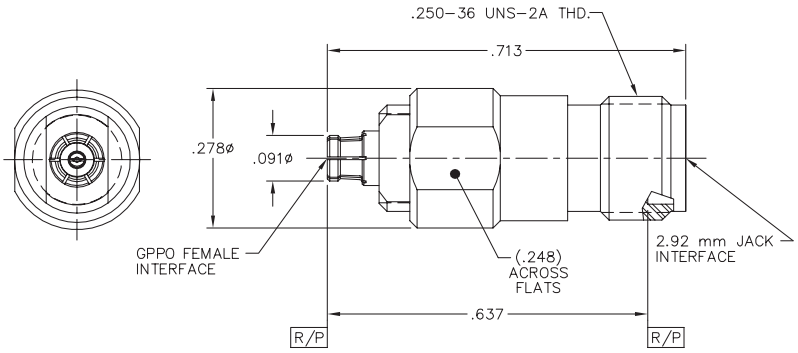

1B1C2-0501-01

1B1C2-0501-01

# GPPO® Female Adapters

## GPPO® Female to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1D1-0503-01 | - | - | |

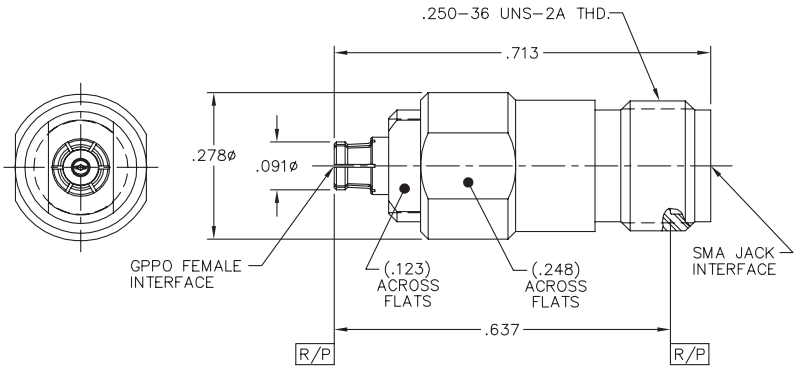



1B1D1-0503-01

1B1D1-0503-01

## GPPO Female to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1F1-0503-01 | - | - | |



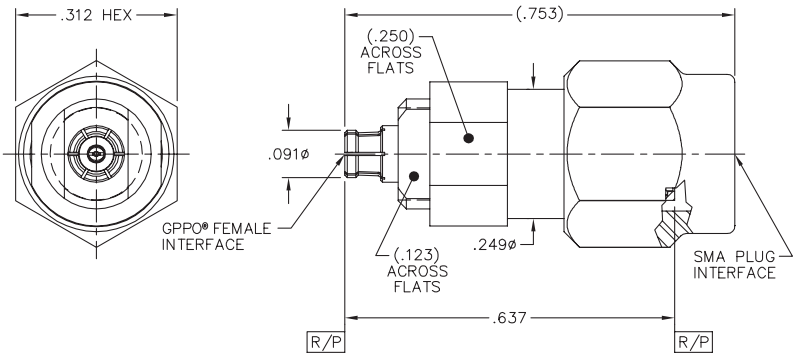

1B1F1-0503-01

1B1F1-0503-01

# GPPO® Female Adapters

## GPPO® Female to SMA Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1F2-0503-01 | - | - | |

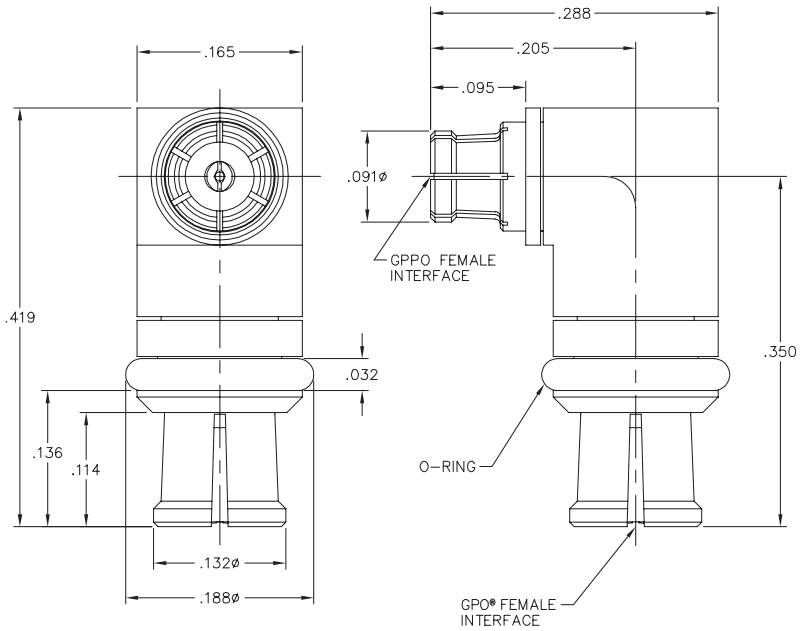



1B1F2-0503-01

1B1F2-0503-01

## GPPO Female to GPO® Female Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1A1-1509-01 | - | - | |



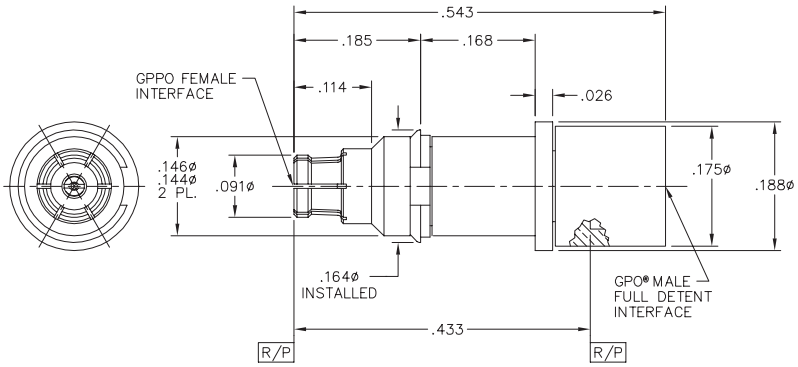

1B1A1-1509-01

1B1A1-1509-01

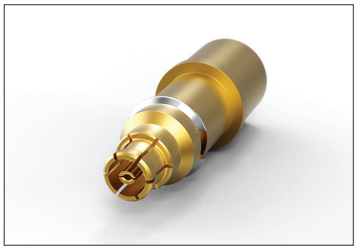
# GPPO® Female Adapters

## GPPO® Female to GPO® Male Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1B1A3-0541-01 | - | - | |




1B1A3-0541-01



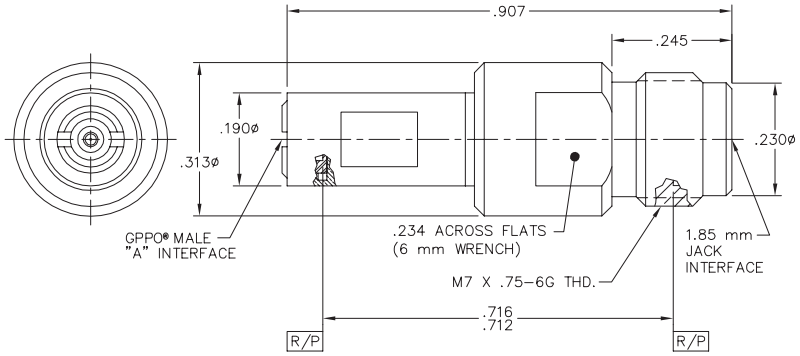
1B1A3-0541-01

# GPPO® Male Adapters

## GPPO® Male to 1.85 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXM1-0509-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



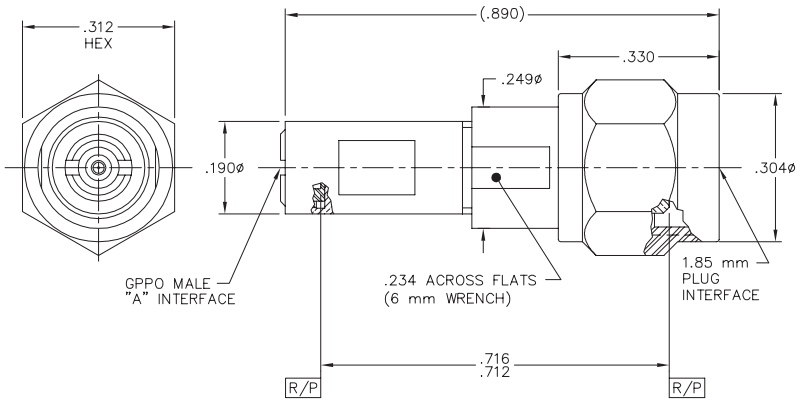

1BXM1-0509-01

1BXM1-0509-01

## GPPO Male to 1.85 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXM2-0509-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1BXM2-0509-01

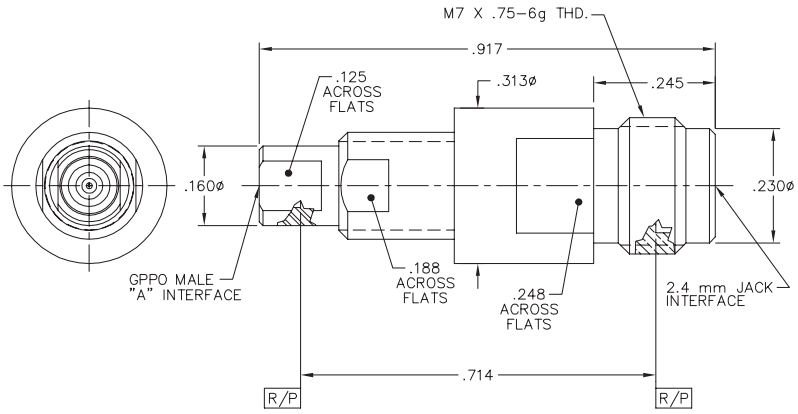
1BXM2-0509-01

# GPPO® Male Adapters

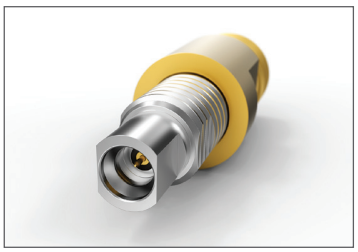
## GPPO® Male to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXC1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1BXC1-0503-01

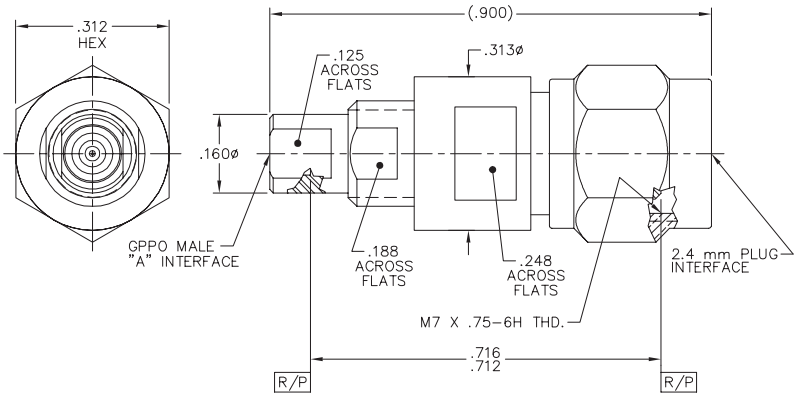


1BXC1-0503-01

## GPPO Male to 2.4 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXC2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1BXC2-0503-01

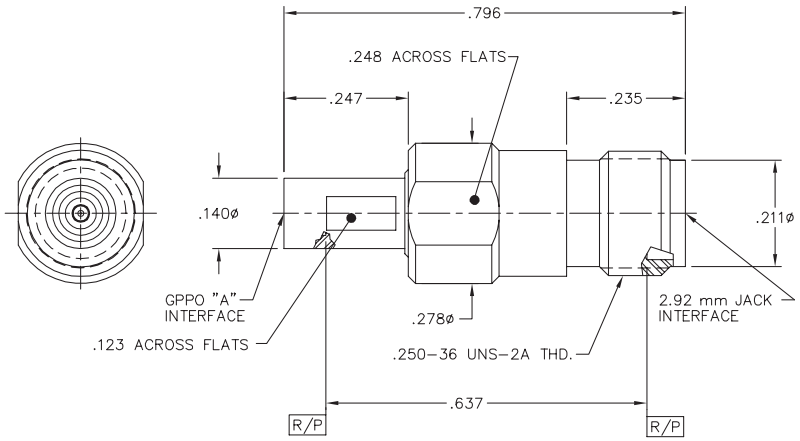
1BXC2-0503-01

# GPPO® Male Adapters

## GPPO® Male to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXD1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



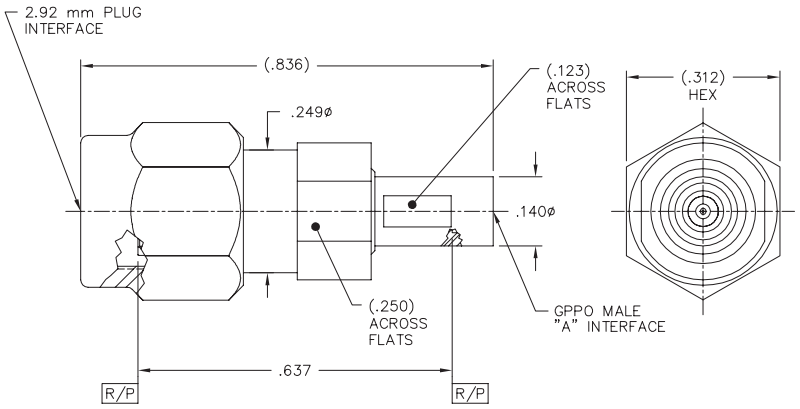

1BXD1-0503-01

1BXD1-0503-01

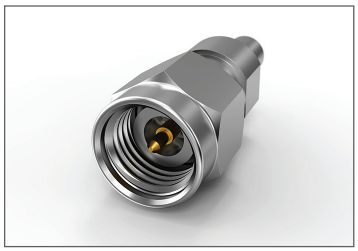
## GPPO Male to 2.92 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXD2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1BXD2-0503-01



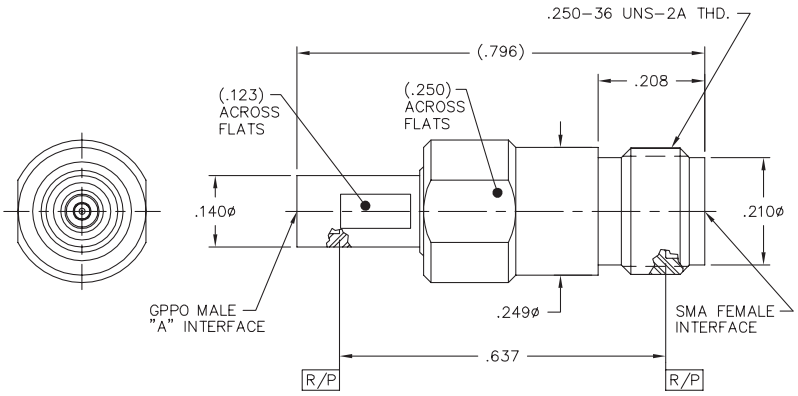
1BXD2-0503-01

# GPPO® Male Adapters

## GPPO® Male to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXF1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



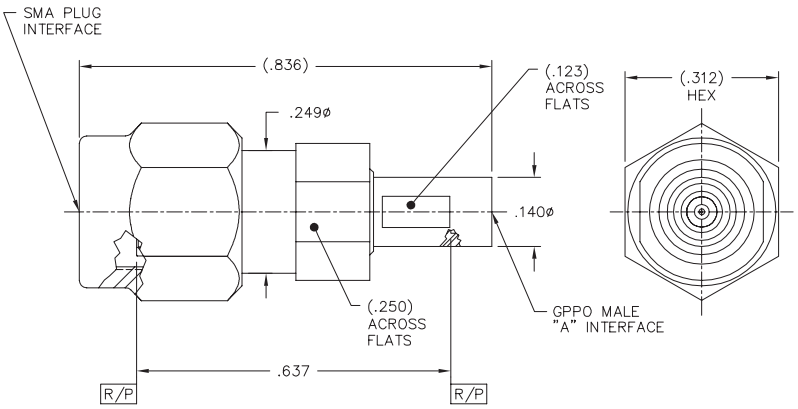

1BXF1-0503-01

1BXF1-0503-01

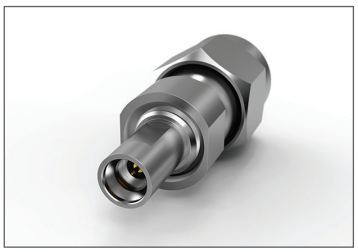
## GPPO Male to SMA Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1BXF2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1BXF2-0503-01



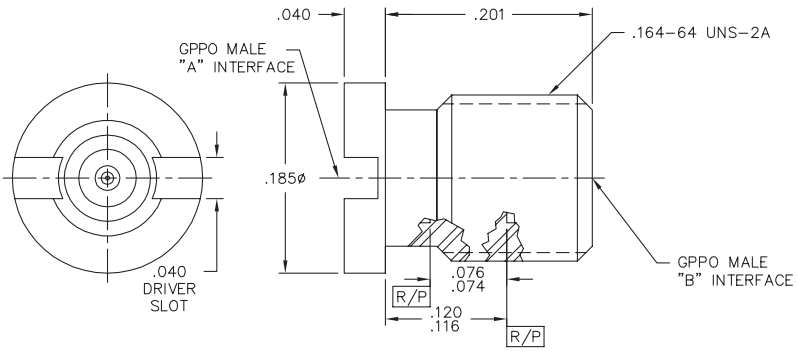
1BXF2-0503-01

# GPPO® Male Adapters

## GPPO® Male to GPPO Male Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| BXBX-0523-02[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



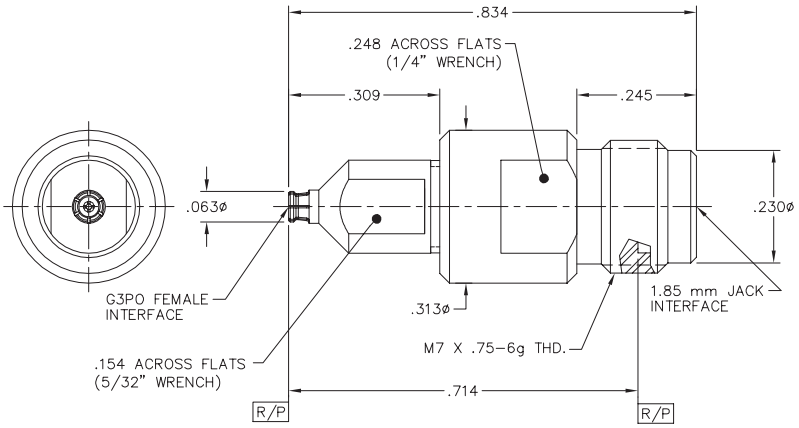

BXBX-0523-02

BXBX-0523-02

# G3PO™ Female Adapters

## G3PO™ Female to 1.85 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1R1M1-0509-01 | - | - | |

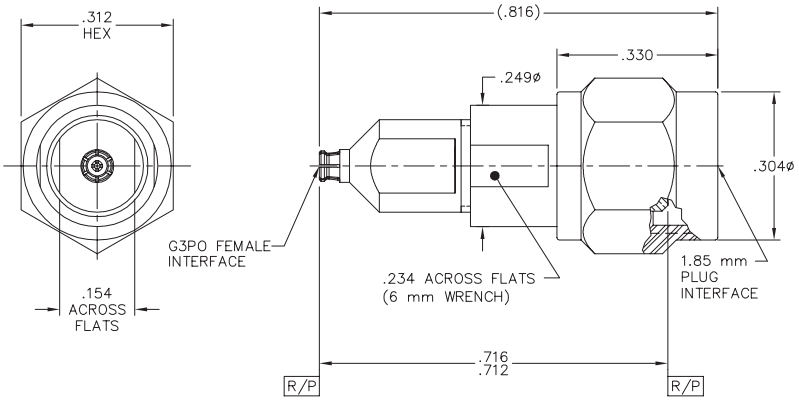



1R1M1-0509-01

1R1M1-0509-01

## G3PO Female to 1.85 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1R1M2-0509-01 | - | - | |



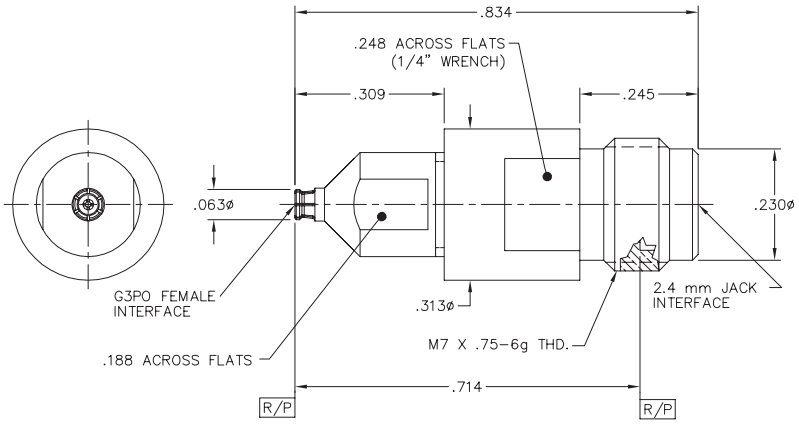

1R1M2-0509-01

1R1M2-0509-01

# G3PO™ Female Adapters

## G3PO™ Female to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1R1C1-0501-01 | - | - | |

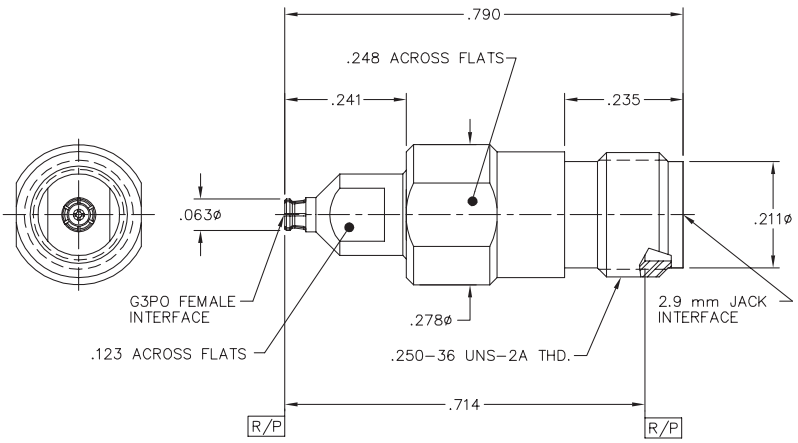



1R1C1-0501-01

1R1C1-0501-01

## G3PO Female to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1R1D1-0503-01 | - | - | |



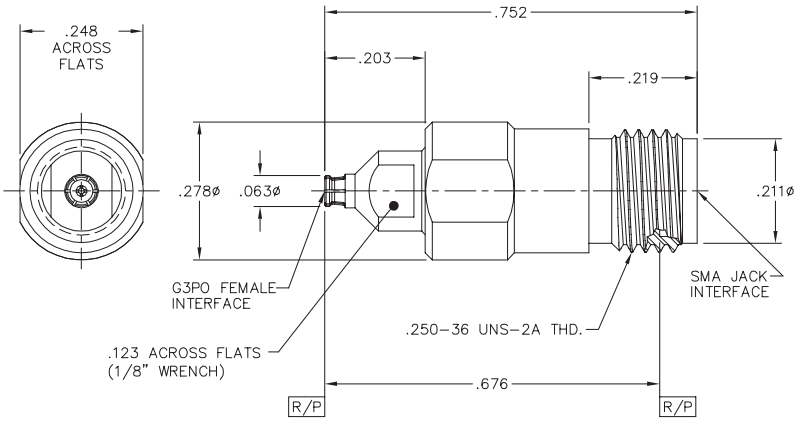

1R1D1-0503-01

1R1D1-0503-01

# G3PO™ Female Adapters

## G3PO™ Female to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1R1F1-0503-01 | - | - | |




1R1F1-0503-01

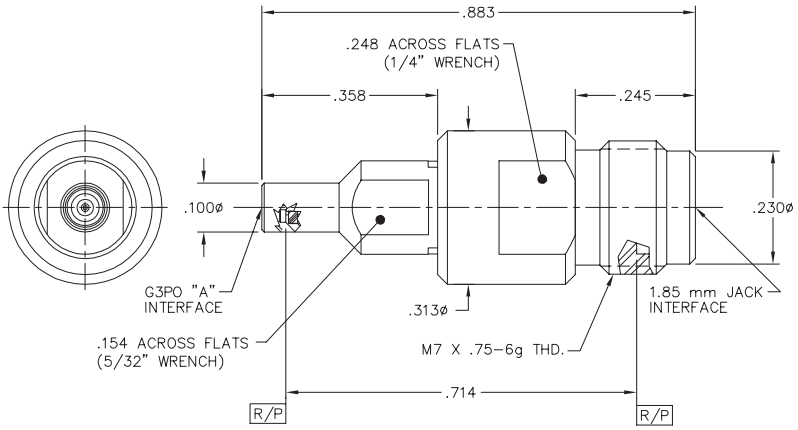
1R1F1-0503-01

# G3PO™ Male Adapters

## G3PO™ Male to 1.85 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXM1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



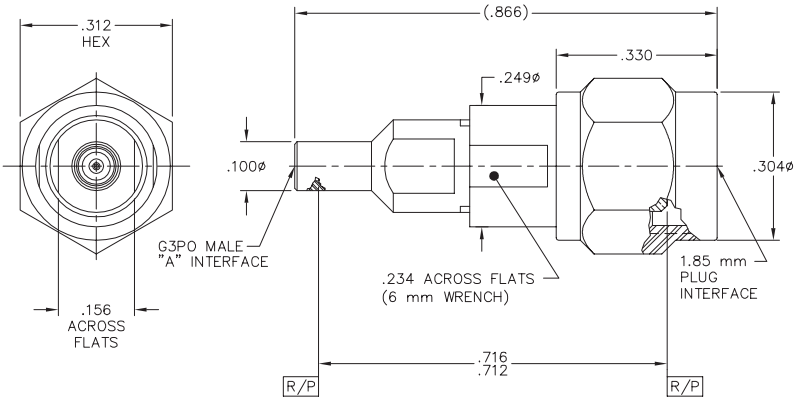

1RXM1-0503-01

1RXM1-0503-01

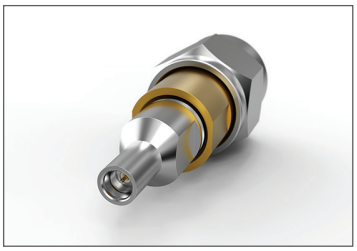
## G3PO Male to 1.85 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXM2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1RXM2-0503-01



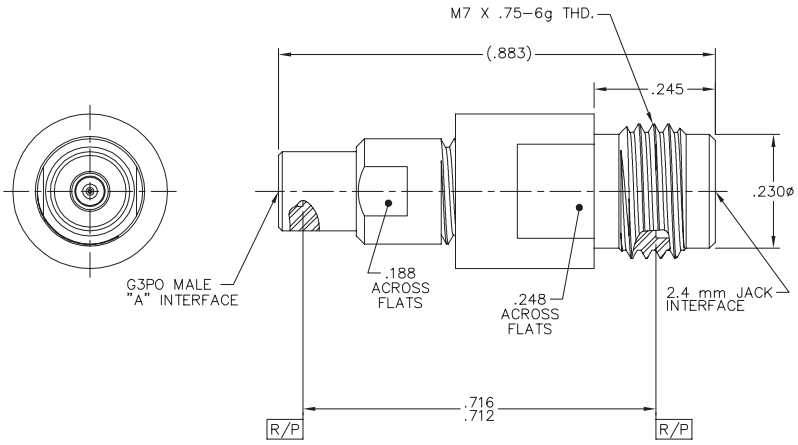
1RXM2-0503-01

# G3PO™ Male Adapters

## G3PO™ Male to 2.4 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXC1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



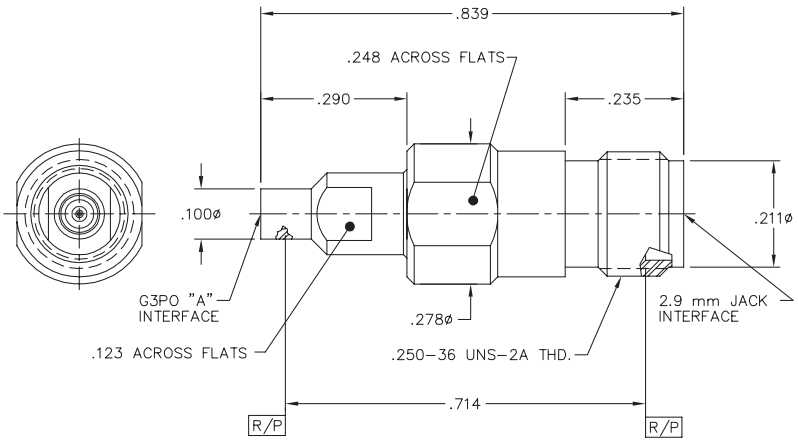

1RXC1-0503-01

1RXC1-0503-01

## G3PO Male to 2.92 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXD1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1RXD1-0503-01

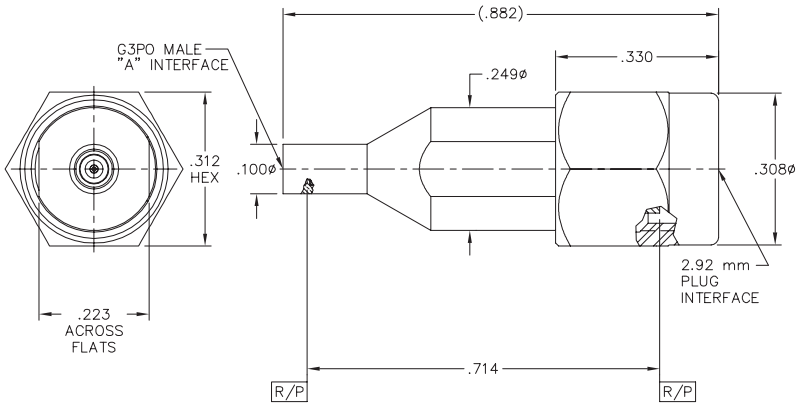
1RXD1-0503-01

# G3PO™ Male Adapters

## G3PO™ Male to 2.92 mm Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXD2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



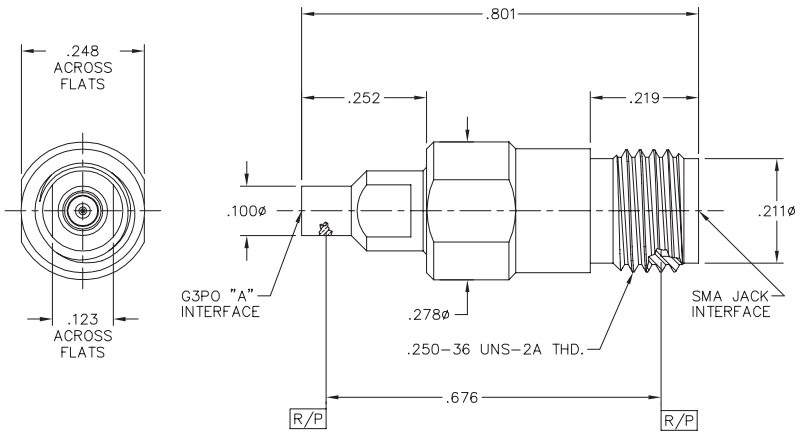

1RXD2-0503-01

1RXD2-0503-01

## G3PO Male to SMA Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXF1-0509-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1RXF1-0509-01

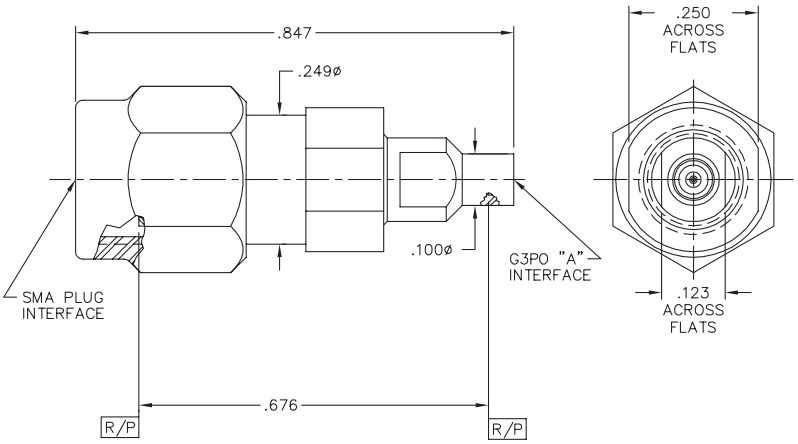
1RXF1-0509-01

# G3PO™ Male Adapters

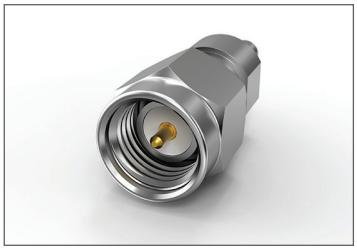
## G3PO™ Male to SMA Plug Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1RXF2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



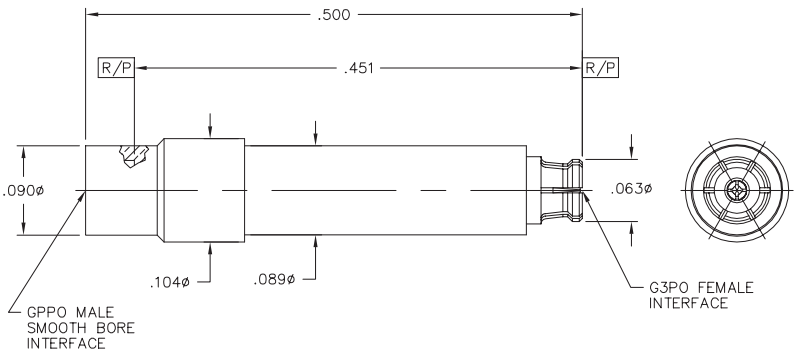

1RXF2-0503-01



1RXF2-0503-01

## G3PO Male to G3PO Female Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| R1R5-0501-01 | - | - | |




R1R5-0501-01

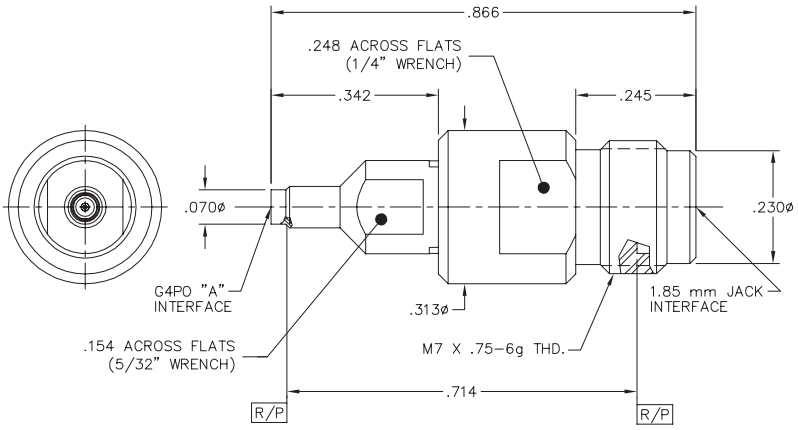
R1R5-0501-01

# G4PO™ Male Adapters

## G4PO™ Male to 1.85 mm Jack Adapter

| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1SXM1-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.



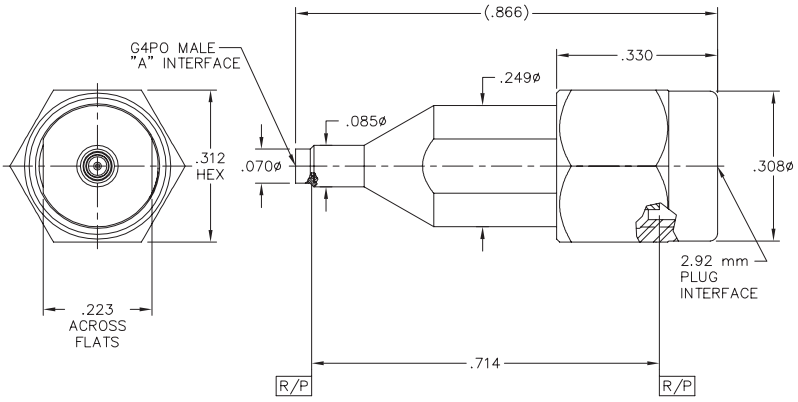

1SXM1-0503-01

1SXM1-0503-01

## G4PO Male to 2.92 mm Plug Adapter

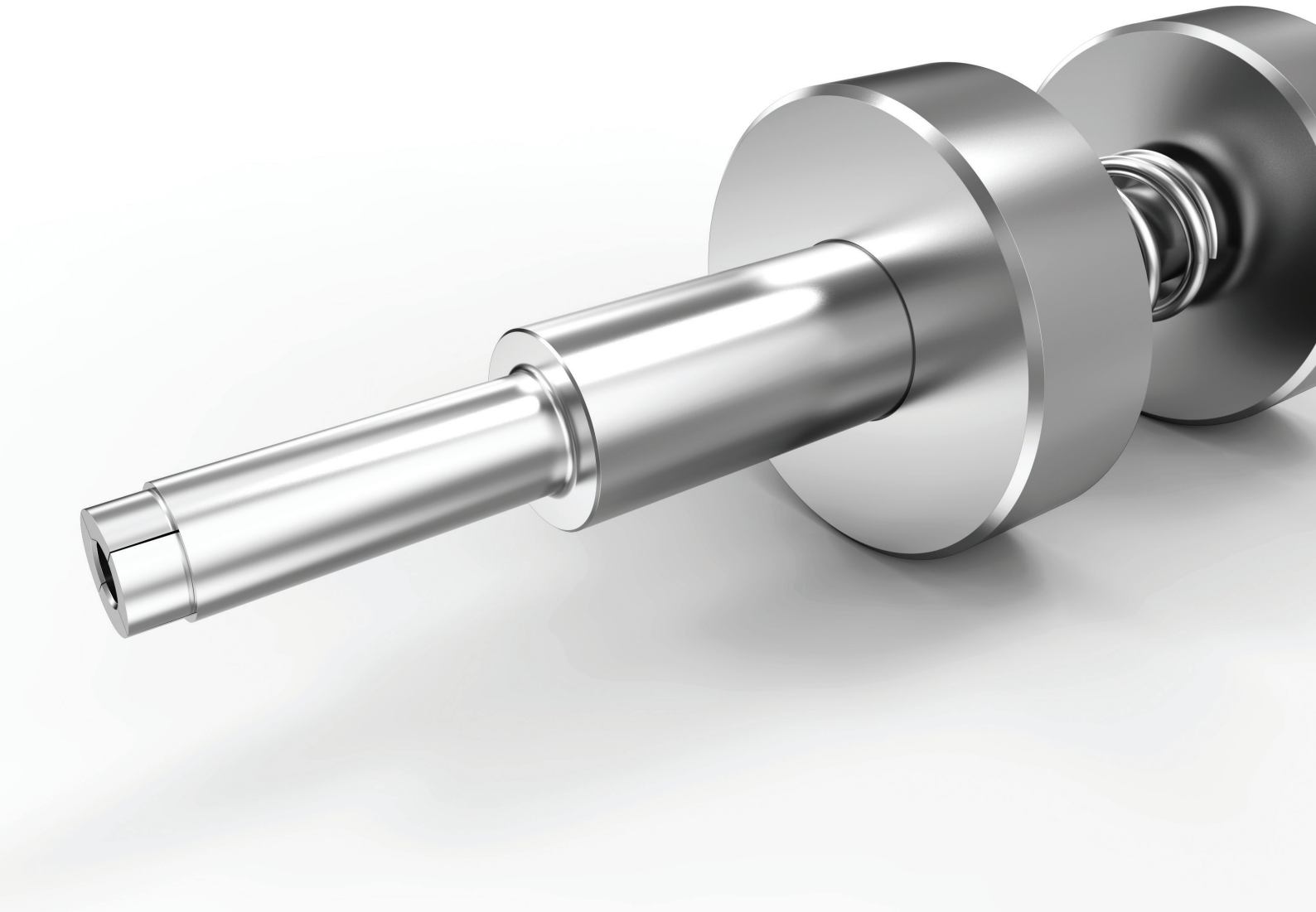
| Catalog Number | Recommended Tools | Assembly Procedure | Notes |
|---|---|---|---|
| 1SXD2-0503-01[1] | - | - | |

[1]"X" stands for Necessary Detent, which will be "3" for Full Detent, "4" for Limited Detent, and "5" for Smooth Bore.




1SXD2-0503-01

1SXD2-0503-01



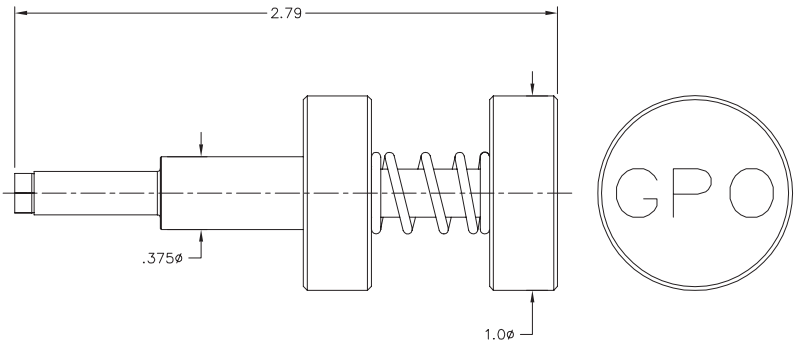
# Tools

- From GPO® to G4PO™, Corning offers installation and removal tools in plunger styles, 90-degree pry bar styles, and straight pry bar styles
- We recognize precision and performance matter, which is why our product portfolio also includes a range of drivers, locating tools, centering tools, holding fixtures, and more

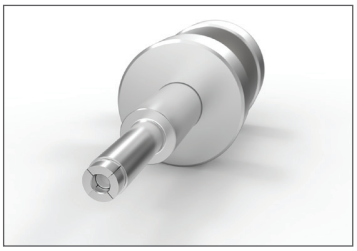
# Installation/Removal Tools

## Blind Mate Interconnect (Bullet) Installation/Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A095-A99-01 | GPO® Install/Removal Tool, plunger style | 2.79 length, Ø1.00 max |
| A095-A99-03 | GPO Low-Impact Removal Tool, plunger style | 2.87 length, Ø1.00 max |
| B095-A99-01 | GPPO® Install/Removal Tool, plunger style | 2.79 length, Ø1.00 max |
| B095-A99-05 | GPPO Low-Impact Removal Tool, plunger style | 2.86 length, Ø1.00 max |
| R095-A99-01 | G3PO™ Low-Profile Install/Removal Tool, plunger style | 2.36 length, Ø1.00 max |
| S094-A91-01 | G4PO™ Insertion Tool, plunger style | 3.00 length, Ø0.25 max |
| S095-A99-01 | G4PO Removal Tool, plunger style | 4.25 length, Ø0.25 max |




A095-A99-01

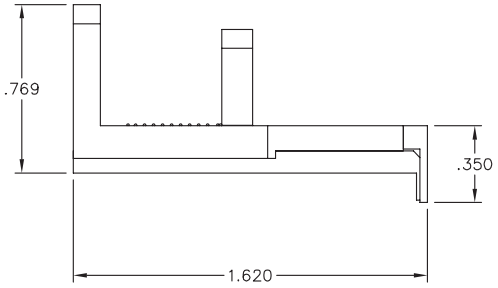


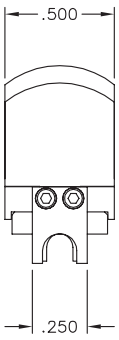
A095-A99-01

# Installation/Removal Tools

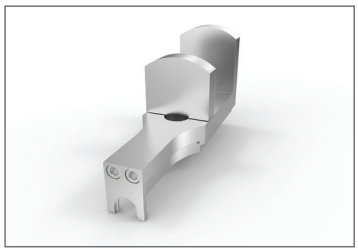
## Straight Cable/Connector Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A098-A99-10 | GPO® Removal Tool, plunger style | 1.62 length, 0.35 tip, 0.77 grip |
| A098-A99-02 | GPO Removal Tool, straight pry bar style | 2.50 length, 0.50 width, 0.03 height |
| A098-A99-03 | GPO Removal Tool, 90-degree pry bar style | 3.35 length, 0.25 width, 0.80 height |
| B098-A99-08 | GPPO® Removal Tool, plunger style | 1.62 length, 0.35 tip, 0.77 grip |
| B098-A99-07 | GPPO Removal Tool, plunger style | 4.31 length, Ø1.00 max |
| B098-A99-03 | GPPO Removal Tool, straight pry bar style | 3.00 length, 0.50 width, 0.30 height |
| B098-A99-02 | GPPO Removal Tool, 30-degree pry bar style | 3.00 length, 0.50 width, 0.60 height |
| B098-A99-04 | GPPO Removal Tool, 90-degree pry bar style | 6.00 length, 0.38 width, 0.32 height |
| R098-A99-01 | G3PO™ Removal Tool, straight pry bar style | 3.00 length, 0.50 width, 0.30 height |
| R098-A99-02 | G3PO Removal Tool, straight pry bar style | 2.80 height, 0.50 width, 0.30 height |

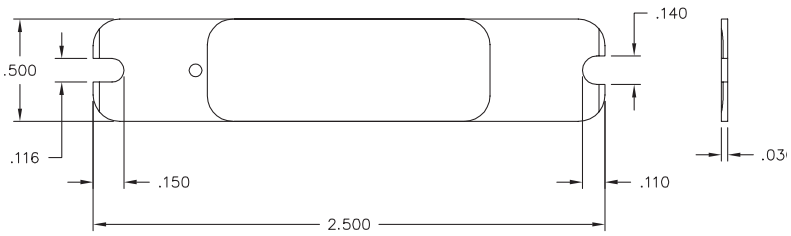


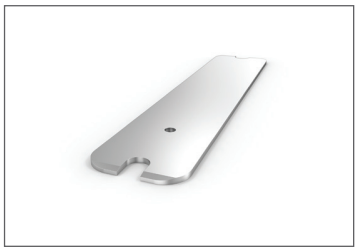

A098-A99-10



A098-A99-10




A098-A99-02

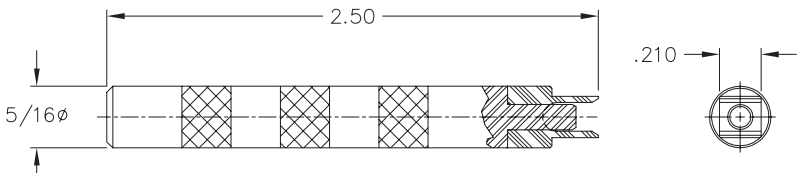


A098-A99-02

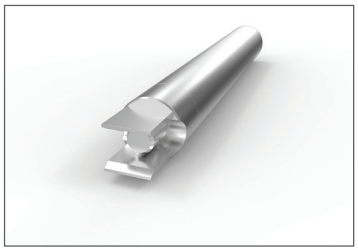
# Installation/Removal Tools

## Right-Angle (R/A) Cable Connector/Installation Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A098-A98-08 | GPO® Right-Angle Removal Tool, plunger style | 4.31 length, Ø1.00 max |
| A098-A99-04 | GPO Female Right-Angle Install Tool | 2.50 length, Ø0.31 max |
| A098-A99-01 | GPO Right-Angle Removal Tool, 90-degree pry bar style | 2.50 length, 0.38 width, 0.32 height |
| B098-A99-01 | GPPO® Female Right-Angle Install Tool | 2.40 length, Ø0.31 max |



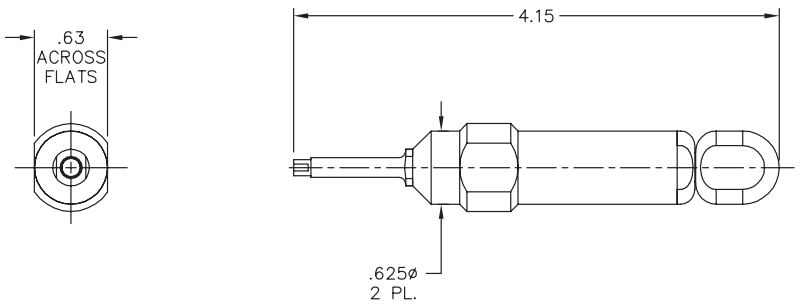

A098-A99-04



A098-A99-04

## Female Snap-In Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| 9001-824-0 | GPO Removal Tool, plunger style | 4.15 length, Ø0.75 max |
| A098-A99-05 | GPO Snap-In Float-Mount Removal Tool | 3.04 length, Ø1.00 max |



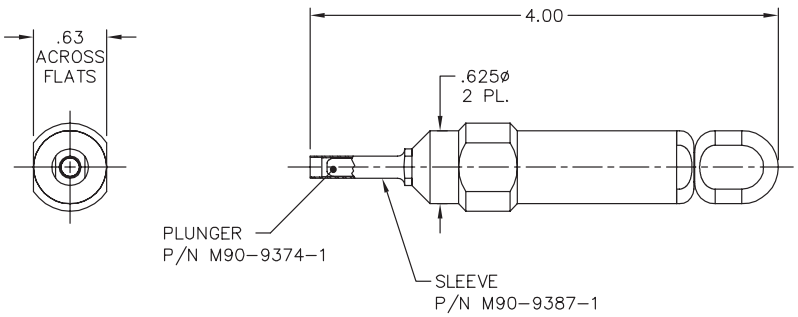

9001-824-0

9001-824-0

# Installation/Removal Tools

## Male Snap-In Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| 9001-820-4 | GPO® Removal Tool, plunger style | 4.00 length, Ø1.14 max |
| 9001-823-0 | GPPO® Removal Tool, plunger style | 4.00 length, Ø0.75 max |
| 9001-819-4 | GPPO Removal Tool, plunger style | 4.00 length, Ø1.14 max |

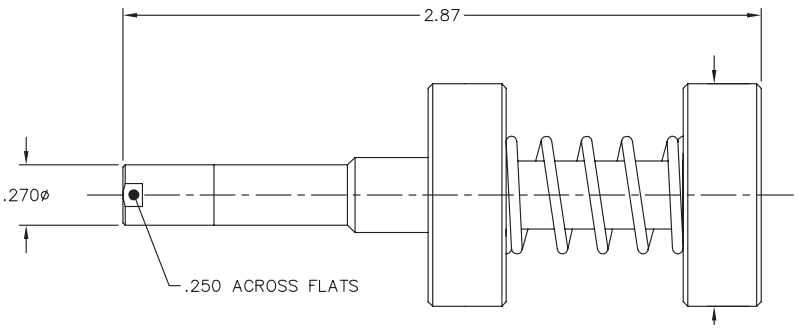



9001-823-0

9001-823-0

## Female Load-Removal Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A093-A99-01 | GPO No-Impact Load-Removal Tool | 2.87 length, Ø1.00 max |



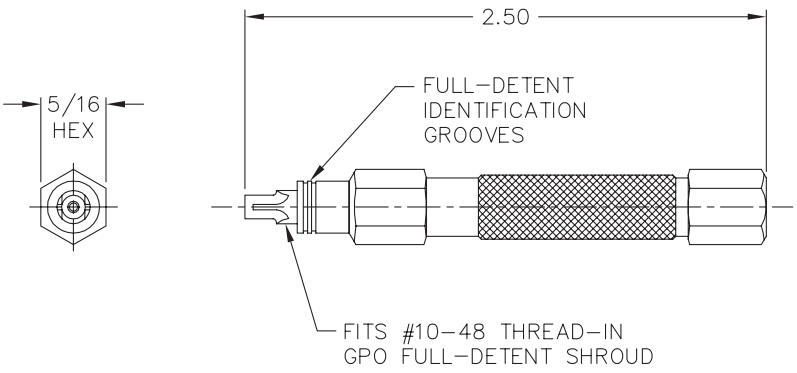

A093-A99-01

A093-A99-01

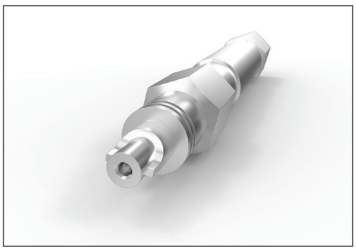
# Driver Tools

## Thread-In Drivers

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A097-A99-01 | GPO® Full-Detent Driver | 2.50 length, Ø0.36 max |
| A097-A99-02 | GPO Limited-Detent Driver | 2.50 length, Ø0.36 max |
| A097-A99-03 | GPO Smooth-Bore Driver | 2.50 length, Ø0.36 max |
| A097-A99-07 | GPO Load-Shroud Driver | 2.50 length, Ø0.41 max |
| B097-A99-01 | GPPO® Full-Detent Driver | 2.50 length, Ø0.36 max |
| B097-A99-02 | GPPO Smooth-Bore Driver | 2.50 length, Ø0.36 max |



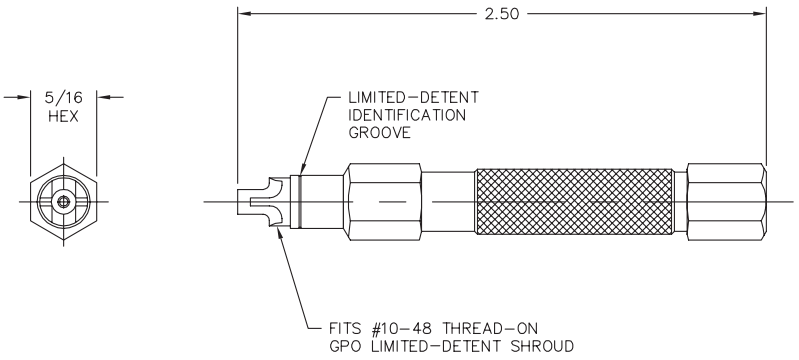

A097-A99-01



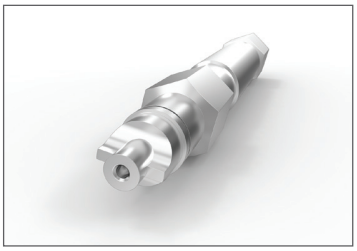
A097-A99-01

## Thread-On Drivers

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A097-A99-04 | GPO Full-Detent Driver | 2.50 length, Ø0.36 max |
| A097-A99-05 | GPO Limited-Detent Driver | 2.50 length, Ø0.36 max |
| A097-A99-06 | GPO Smooth-Bore Driver | 2.50 length, Ø0.36 max |




A097-A99-04

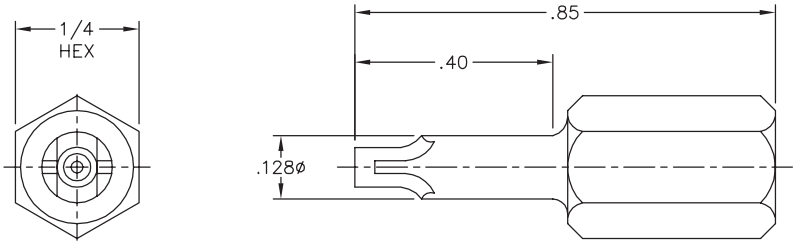


A097-A99-04

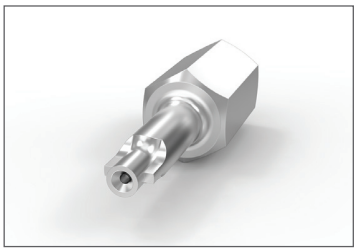
# Driver Tools

## Shroud Drivers

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| B097-A99-04 | GPPO® Full-Detent Driver | 0.85 length, Ø0.29 max |




B097-A99-04

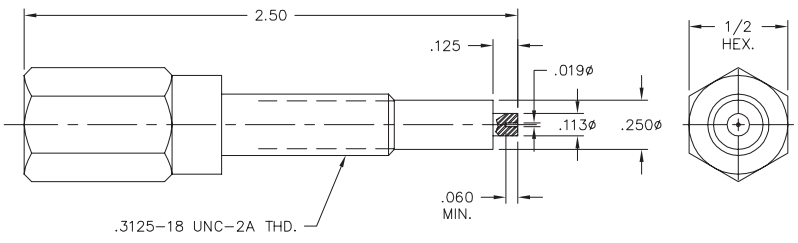


B097-A99-04

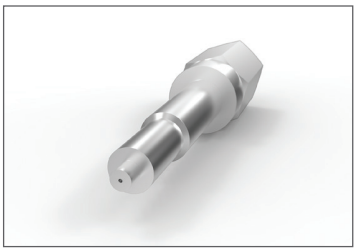
# Locating Tools

## Interface Locating Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A096-A99-02 | GPO® Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-03 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-04 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-09 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-06 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| 9001-984-0 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| B096-A99-01 | GPPO Full-Detent Locator Tool | 2.50 length, Ø0.58 max |
| B096-A99-02 | GPPO Smooth-Bore Locator Tool | 2.50 length, Ø0.58 max |




A096-A99-03

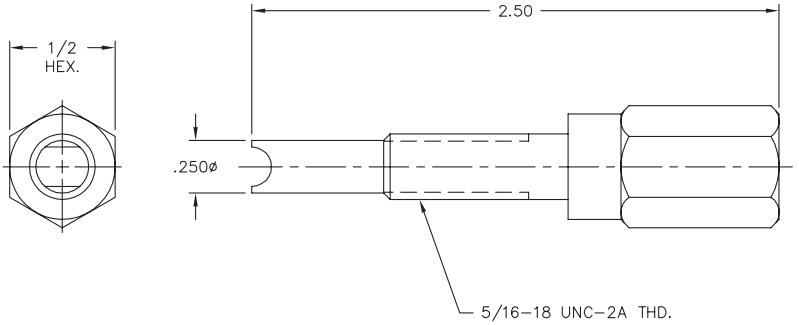


A096-A99-03

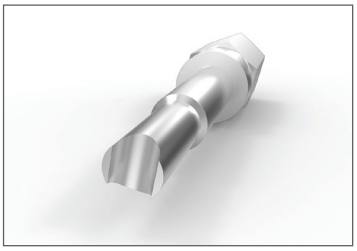
# Locating Tools

## Right-Angle Locating Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A096-A99-07 | GPO® Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-08 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |
| A096-A99-10 | GPO Locator Tool, 5/16-18 UNC-2A outer thread | 2.50 length, Ø0.58 max |



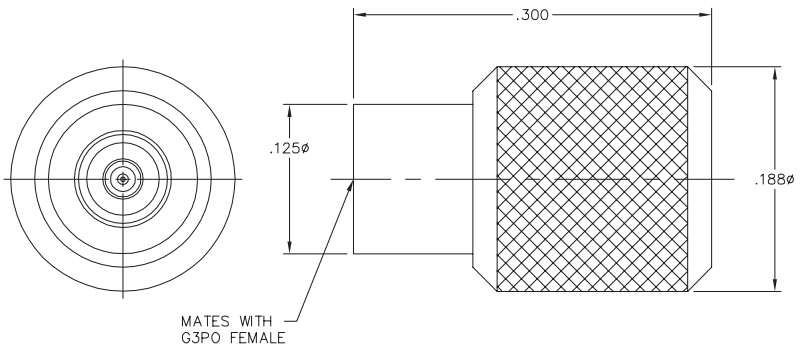

A096-A99-07



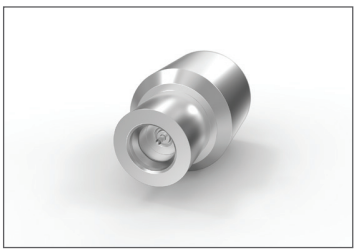
A096-A99-07

## Contact Locating Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| R096-A95-01 | G3PO™ Female Contact Locator | 0.30 length, Ø0.19 max |
| R096-A23-01 | G3PO Male Full-Detent Contact Locator | 0.30 length, Ø0.19 max |
| R096-A25-01 | G3PO Male Smooth-Bore Contact Locator | 0.30 length, Ø0.19 max |




R096-A95-01

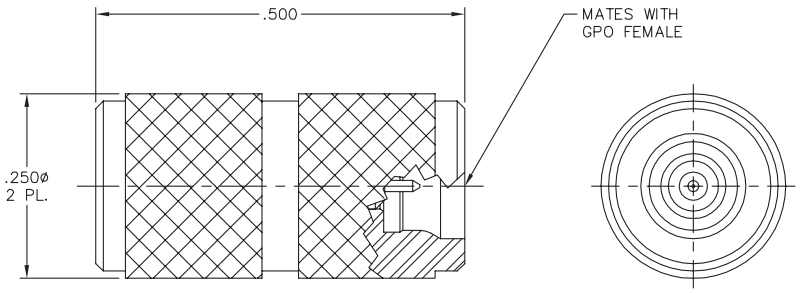


R096-A95-01

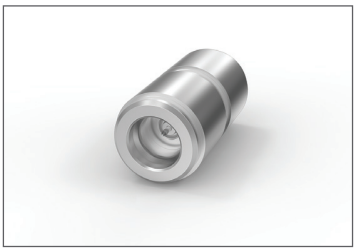
# Retaining Tools

## Contact Retaining Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A096-A99-01 | GPO® Contact Retainer | 0.50 length, Ø0.25 max |
| B096-A93-01 | GPPO® Contact Retainer | 0.30 length, Ø0.19 max |




A096-A99-01

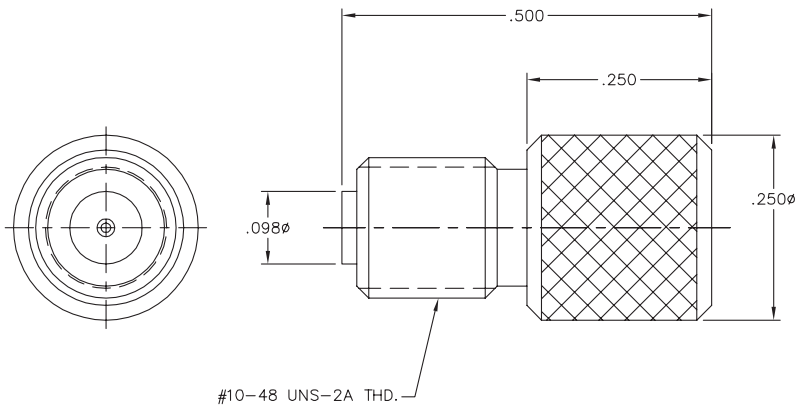


A096-A99-01

# Seal Locating Tools

## Seal Locating Tools for Thread-In Shrouds

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A090-A99-01 | GPO Seal Locator, #10-48 UNS-2A outer thread | 0.50 length, Ø0.25 max |
| B090-A99-05 | GPPO Seal Locator, .164-64 UNS-2A outer thread | 0.50 length, Ø0.25 max |



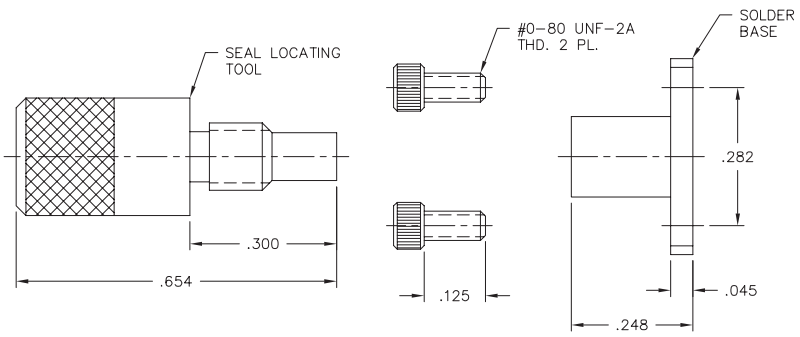

A090-A99-01

A090-A99-01

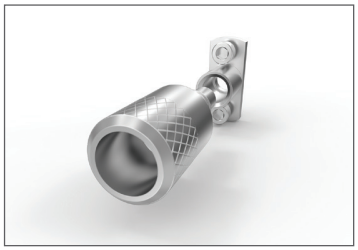
# Seal Locating Tools

## Seal Locators for Flanged Connectors

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A090-A99-10 | GPO® Flange Seal Locator for .282 hole spacing | 0.65 length, Ø0.24 max |
| A090-A99-11 | GPO Flange Seal Locator for .328 hole spacing | 0.65 length, Ø0.24 max |
| A090-A99-09 | GPO Flange Seal Locator for .481 hole spacing | 0.65 length, Ø0.24 max |
| B090-A99-09 | GPPO® Flange Seal Locator for .282 hole spacing | 0.50 length, Ø0.13 max |
| B090-A99-08 | GPPO Flange Seal Locator for .481 hole spacing | 0.50 length, Ø0.13 max |



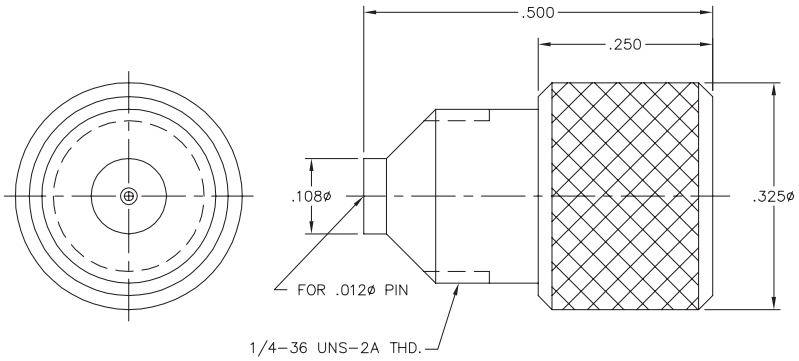

A090-A99-10



A090-A99-10

## Seal Locators for Center Conductors

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| 9001-923-3 | Seal Locating Fixture for Ø .018 center conductor | 0.50 length, Ø0.33 max |
| A090-A99-07 | Seal Locating Fixture for Ø .012 center conductor, ¼-36 UNS-2A outer thread | 0.50 length, Ø0.33 max |
| B090-A99-07 | Seal Locating Fixture for Ø .009 center conductor, M6 x .75-6g outer thread | 0.50 length, Ø0.33 max |



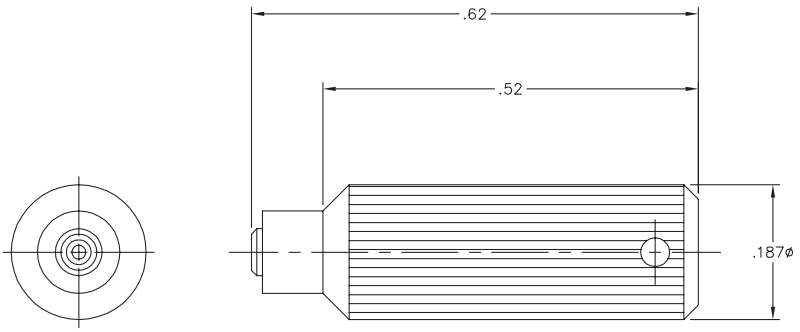

A090-A99-07

A090-A99-07

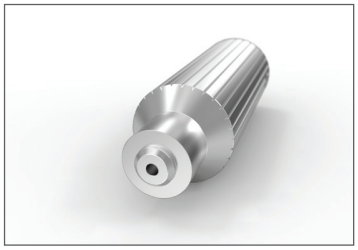
# Centering Tools

## Shroud Centering Tools

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| A090-A99-03 | GPO® Shroud Centering Tool for Ø .015 center conductor | 0.62 length, Ø0.19 max |
| B090-A99-01 | GPPO® Shroud Centering Tool | 0.60 length, Ø0.19 max |
| B090-A99-02 | GPPO Smooth-Bore Shroud Centering Tool | 0.60 length, Ø0.19 max |



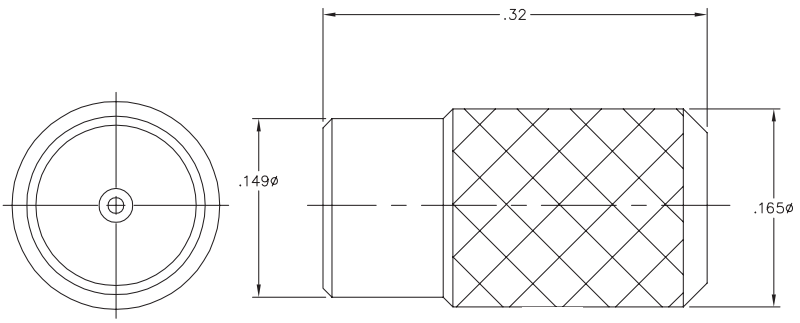

A090-A99-03



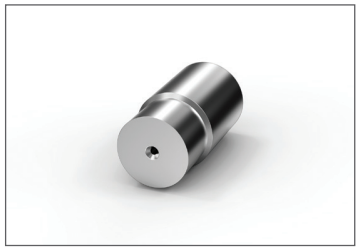
A090-A99-03

## Seal-Centering Tools for Press-In Shrouds

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| B090-A99-06 | GPPO Seal-Centering Tool for press-in shroud | 0.32 length, Ø0.17 max |




A090-A99-10

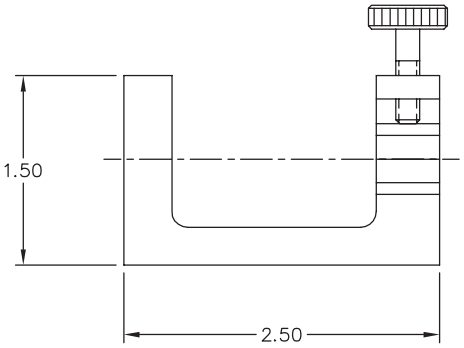


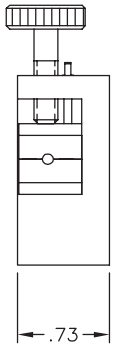
B090-A99-06

# Cable Fixtures

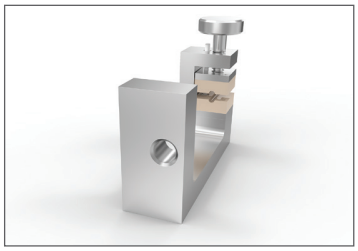
## Cable Holding Fixtures

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| L096-A99-05 | Cable Holding Fixture, no cable inserts | 2.50 length, 0.73 width, 1.50 height |
| L096-A99-02 | Cable Holding Fixture with inserts for .047 S/R cable | 2.50 length, 0.73 width, 1.50 height |
| OMNI Model No. T-4567 | Cable Holding Fixture for .047 S/R cable, see L096-A99-02 | 2.50 length, 0.73 width, 1.50 height |
| L096-A99-07 | Inserts for .047 S/R cable | 2 x 0.50 length, 0.50 width, 0.28 height |
| L096-A99-01 | Cable Holding Fixture with inserts for .086 S/R cable | 2.50 length, 0.73 width, 1.50 height |
| OSI Model No. T-4567 | Cable Holding Fixture for .086 S/R cable, see L096-A99-01 | 2.50 length, 0.73 width, 1.50 height |
| L096-A99-06 | Inserts for .086 S/R cable | 2 x 0.50 length, 0.50 width, 0.28 height |
| L096-A99-10 | Cable Holding Fixture for .141 cable | 2.50 length, 0.73 width, 1.50 height |



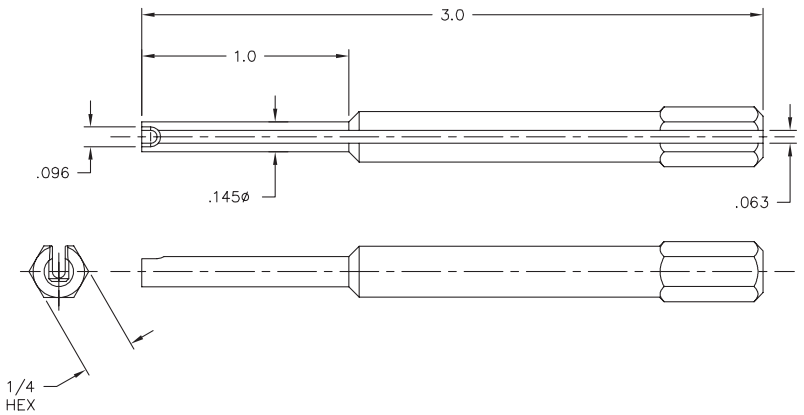

L096-A99-01



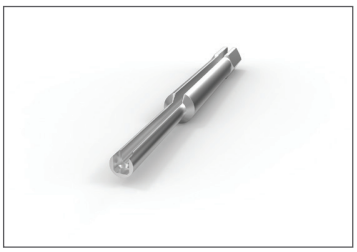
L096-A99-01

## Cable Assembly Clamp Nut Torque Tool

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| L096-A99-12 | Cable Assembly Clamp Nut Torque Tool | 3.0 length, Ø0.29 max |




L096-A99-12

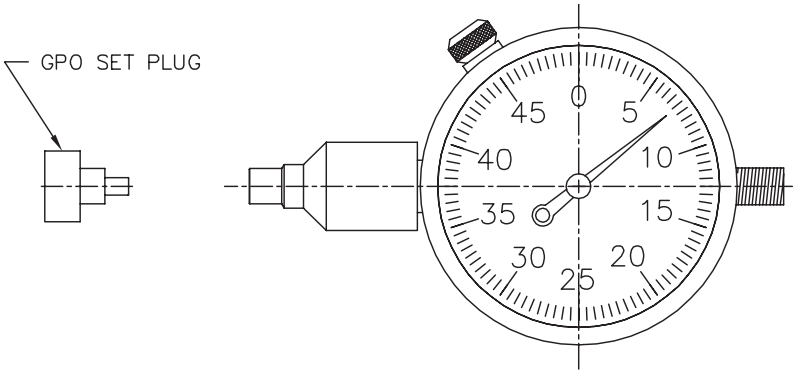


L096-A99-12

# Miscellaneous

## Interface Gauges

| Catalog Number | Notes |
|---|---|
| 9160-112-3 | GPO® Contact Interface Gauge for male bulkhead shrouds |
| 9160-110-3 | GPO Dielectric Interface Gauge |
| 9160-107-3 | GPO Female Contact Interface Gauge |
| 9160-108-3 | GPO Female Dielectric Interface Gauge |
| 9160-109-3 | GPO Male Contact Interface Gauge |
| 9160-123-3 | GPPO® Male Dielectric Interface Gauge |
| 9160-115-3 | GPPO Female Contact Interface Gauge |
| 9160-116-3 | GPPO Male Contact Interface Gauge |

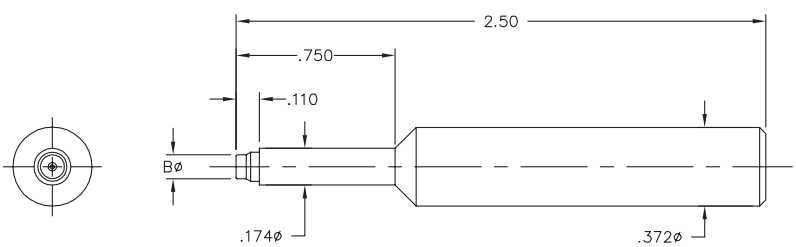



9160-107-3

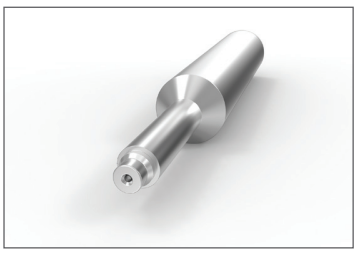
9160-107-3

## Press-In Punches

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| 9001-964-0-FD | GPO Full-Detent Press-In Punch | 2.50 length, Ø0.37 max |
| 9001-964-0-LD | GPO Limited-Detent Press-In Punch | 2.50 length, Ø0.37 max |
| 9001-964-0-SB | GPO Smooth-Bore Press-In Punch | 2.50 length, Ø0.37 max |
| B097-A99-03 | GPPO Press-In Punch | 2.50 length, Ø0.37 max |




9001-964-0-FD

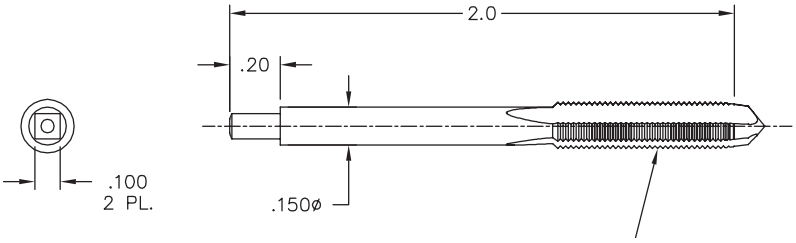


9001-964-0-FD

# Miscellaneous

## Starting and Bottoming Taps

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| L091-A99-01 | Three Flute Plug Starting Tap for #10-48 GH3 thread | 2.00 length, Ø0.15 max |
| L091-A99-02 | Four Flute Bottoming Tap for #10-48 H2 thread | 2.00 length, Ø0.15 max |
| L091-A99-05 | Four Flute Bottoming Tap for #10-48 H2 thread | 2.50 length, Ø0.23 max |
| L091-A99-06 | Four Flute Bottoming Tap for #10-48 H2 thread | 2.50 length, Ø0.23 max |
| B099-A99-01 | Four Flute Bottom Tap for .164-64 UNS-2B thread | 2.00 length, Ø0.15 max |
| B099-A99-02 | Four Flute Bottom Tap for .164-64 UNS-2B thread | 2.00 length, Ø0.15 max |

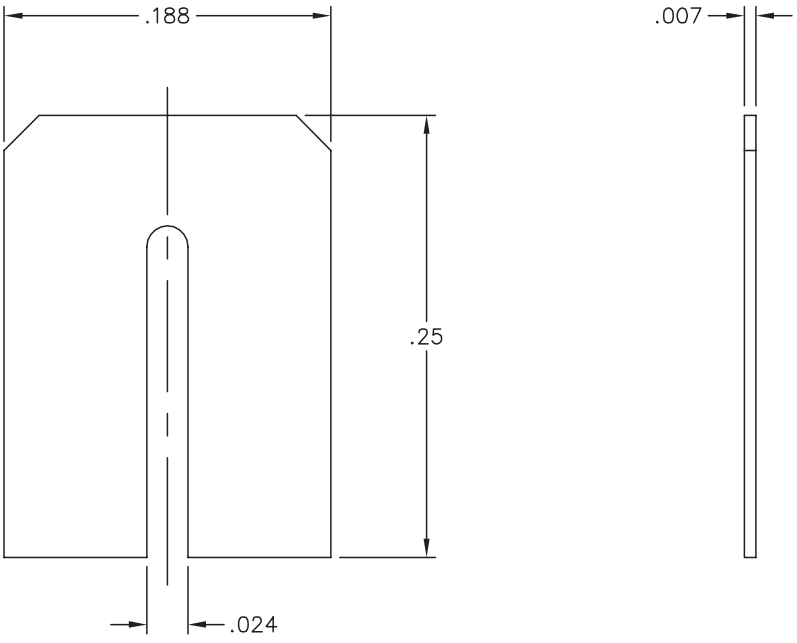



L091-A99-01

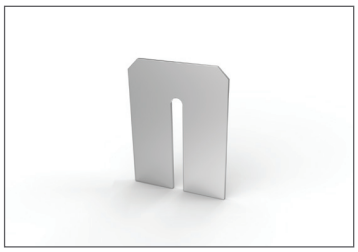
L091-A99-01

## Seal Locating Tools for Thread-In Shrouds

| Catalog Number | Notes | Package Dimensions (Inches) |
|---|---|---|
| L096-A99-04 | Shim Gauge .006 thick with .0235 slot | 0.25 length, 0.19 width, 0.007 height |
| L096-A99-03 | Shim Gauge .010 thick with .0235 slot | 0.25 length, 0.19 width, 0.01 height |




L096-A99-04



L096-A99-04

# Technical Guide

# Test Capabilities

Corning's commitment to quality has made us a leader in the connector industry. Mechanical and electrical quality is verified in every lot of connectors via the internal standard testing procedures. These standard tests include, but are not limited to:

- Visual and mechanical inspection
- Dielectric withstanding voltage (DWV)
- Hermetic seal
- Leakage
- Force to engage/disengage
- Mating characteristics
- Permeability
- Insulation resistance
- Voltage standing wave radio (VSWR)

All tests listed above are standard and part of groups A and B testing, per MIL-PRF-39012 or MIL-PRF-31031.

Expanded testing may be obtained by requesting ATP-2000. This test includes all of ATP-1000, as well as 100 percent thermal shock testing and 100 percent visual and mechanical inspection. We also offer additional product requirements and testing.

Since many Corning connectors are utilized in military or aerospace applications, custom test inspection documents (TIDs) are created on a regular basis for those requiring heightened or special testing. The TIDs verify compliance to the customers' requests and/or their submitted source-controlled documents (SCDs).

Whether you are looking for a commercial, off-the-shelf part, or need extensive qualification and acceptance testing, Corning can assure you and your customers that the parts you need are the parts you receive.

# Custom Packaging

Corning is a leader in designing custom solutions, whether it is with specialty connectors or for special packaging/delivery requirements. Our in-house surface-mount device (SMD) tape and reel capabilities provide a turnkey solution with a quick turnaround, while maintaining compliance with EIA-481C.

## Other Packaging Options

In addition to tape and reel, we offer custom packaging that can be incorporated into various programs for quick and efficient distribution to the manufacturing floor. For example, highly compact waffle packs are designed to accommodate G3PO™ blind mate interconnects in excess of 200 pieces in trays as small as 2 x 2 x 0.5 in. Available options also include color coding, electrostatic discharge (ESD), and bar code labeling.

# Introduction

Corning provides push-on interconnect solutions that are designed for blind mating and electrical performance when fully mated or mechanically misaligned. The push-on interface features ease of mating along with a high-reliability electro-mechanical connection. This solution enables high-density system flexibility while maintaining functionality from DC to 65 GHz.

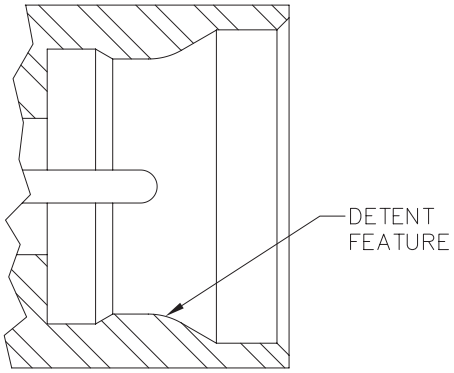



Figure 1 – Full Detent

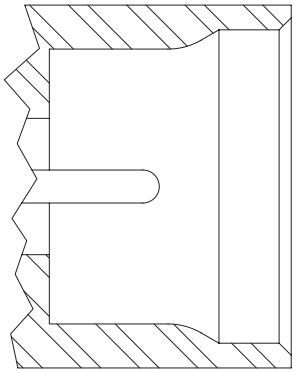


Figure 2 – Smooth Bore

Detent features are provided to retain the push-on connectors in the mated condition. Different levels of engage and disengage forces are accomplished by the stepped feature on the inside of the shroud housing. Figure 1 shows the full detent interfaces are also available with reduced engage and disengage forces. Figure 2 shows the smooth bore interface which has the lowest mating forces (no stepped detent feature).

Module-to-module and board-to-board applications typically use a three-connector system. One Blind Mate interconnect (BMI), also known as a bullet, is mated between a full detent and a smooth bore shroud. The full detent interface retains the BMI yet allows radial misalignment. The smooth bore interface allows misalignment in both radial and axial orientations.

Mechanical misalignment is the result of multiple component systems and the associated positional tolerances. Axial misalignment is the offset distance between the shroud and BMI reference planes. For most connectors, coplanar reference planes provide the best electrical performance. Corning can design connectors for optimal performance with a preset amount of axial misalignment. This enables good electrical performance with movement in both axial directions. Radial misalignment is the distance between the centerlines of the mated shroud connectors. Also known as gimballing, radial misalignment is directly related to the BMI length.

# Introduction

Figure 3 shows the BMI axially misaligned with an offset distance between the shroud and BMI reference planes. The fully mated condition (no offset) is ideal for best electrical performance on most connectors.

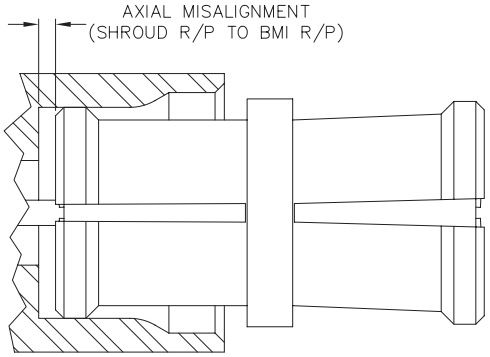



Figure 3 – Axial Misalignment

Figure 4 shows the BMI mated between two connectors that are radially misaligned from centerline to centerline. The amount of radial misalignment is dependent upon the length and angle of the BMI. The GPO® standard angle of three degrees is mainly a function of the allowable connector housing movement.

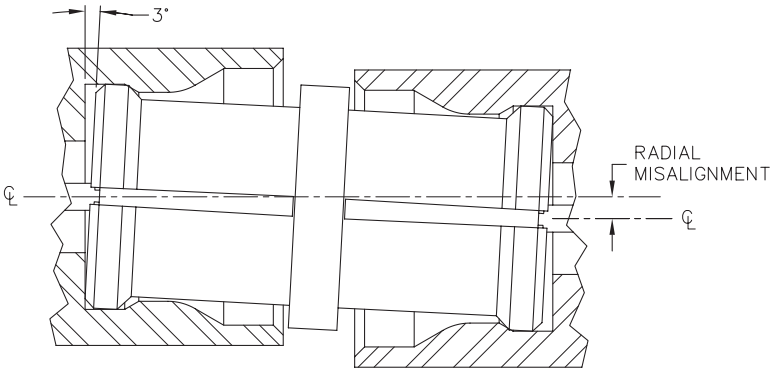



Figure 4 – Radial Misalignment

Various configurations are available such as blind mate interconnects, printed circuit board connectors, cable connectors, and hermetic panel connectors. The GPO connectors are also functionally compliant with the SMP interface of MIL-PRF-31031. Performance and reliability make Corning the push-on connector of choice.

# 1.0 Materials and Finishes

Tables 1A, 1B, and 1C show the standard materials and finishes used to manufacture Corning push-on connectors. This includes various configurations across our GPO®, GPPO®, G3PO™, and G4PO™ product families.

## Table 1A – Metal Materials

| Material | Specification |
|---|---|
| BeCu (beryllium copper) | ASTM B 196 and/or ASTM B 197 |
| Brass | ASTM B 36, B121, B16, B16M |
| Stainless steel | ASTM A484/A582 or A555/581 |
| Iron-nickel-cobalt | ASTM F-15 |

## Table 1B – Metal Finishes

| Finish | Specification |
|---|---|
| Gold (75u in. Typ) | ASTM-B488 Type 1, Class 1.25 |
| Nickel (1007 in. Typ) | SAE AMS-QQ-N-290 |

## Table 1C – Dielectric Materials

| Material | Specification |
|---|---|
| Virgin PTFE fluorocarbon | ASTM D 1710 and ASTM D 1457 |
| Polyamide-imide | ASTM D5204 Group 2 Class 1 |
| Glass | Corning 7070 or Equivalent |

The characteristics of the above materials enable the standard storage and operating temperature range of -65 to +165 degrees Celsius.

# 2.0 GPO®

## 2.1 GPO® Detents – Full, Limited, and Smooth Bore

Table 2 shows the available GPO detents, typical engage/disengage forces, and mating cycles.

### Table 2 – GPO Detent Forces and Mating Cycles

| Detent | GPO | | |
|---|---|---|---|
| | Engage* | Disengage* | Cycles (Minutes) |
| Full | 7.0 | 9.0 | 100 |
| Limited | 5.0 | 7.0 | 500 |
| Smooth Bore | 3.0 | 0.5 | 1,000 |

*The engage/disengage force values (shown in pounds) are typical and based upon actual data

## 2.2 GPO Axial Misalignment

Figure 5 shows the GPO VSWR electrical performance vs. frequency and axial misalignment.

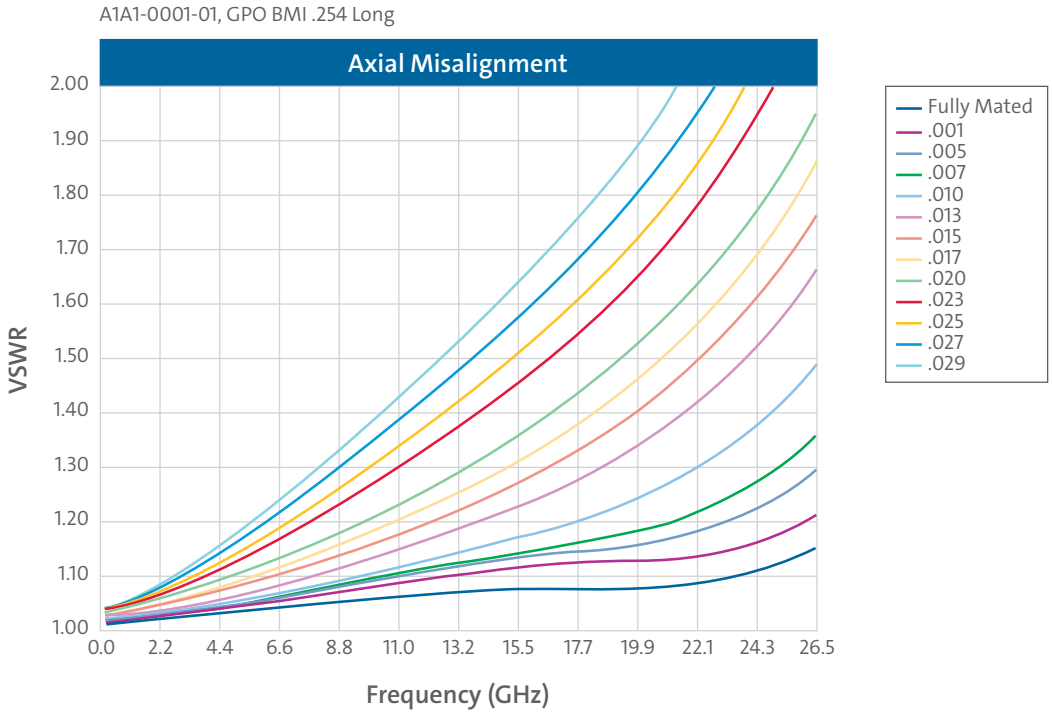



Figure 5 – GPO Axial Misalignment Performance

# 2.0 GPO®

## 2.3 GPO® Radial Misalignment

Figure 6 shows the GPO VSWR electrical performance vs. frequency and radial misalignment.

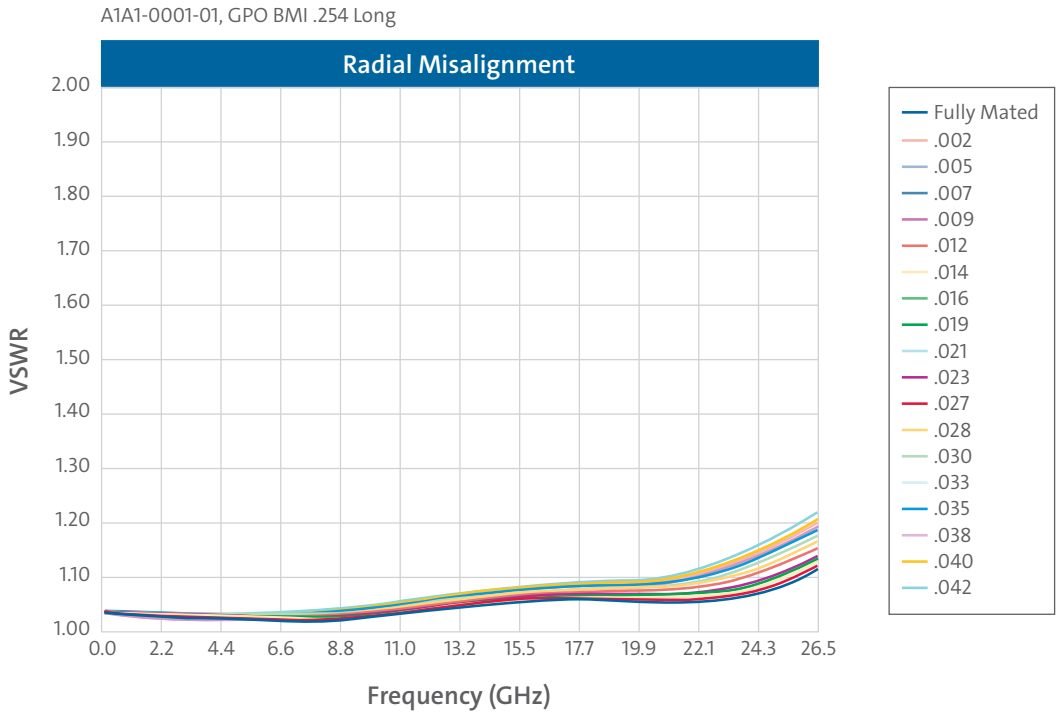



Figure 6 – GPO Radial Misalignment Performance

## 2.4 GPO VSWR and Insertion Loss

Figure 7 – GPO BMI A1A1-0001-01

# 2.0 GPO®

## 2.4 GPO® VSWR and Insertion Loss

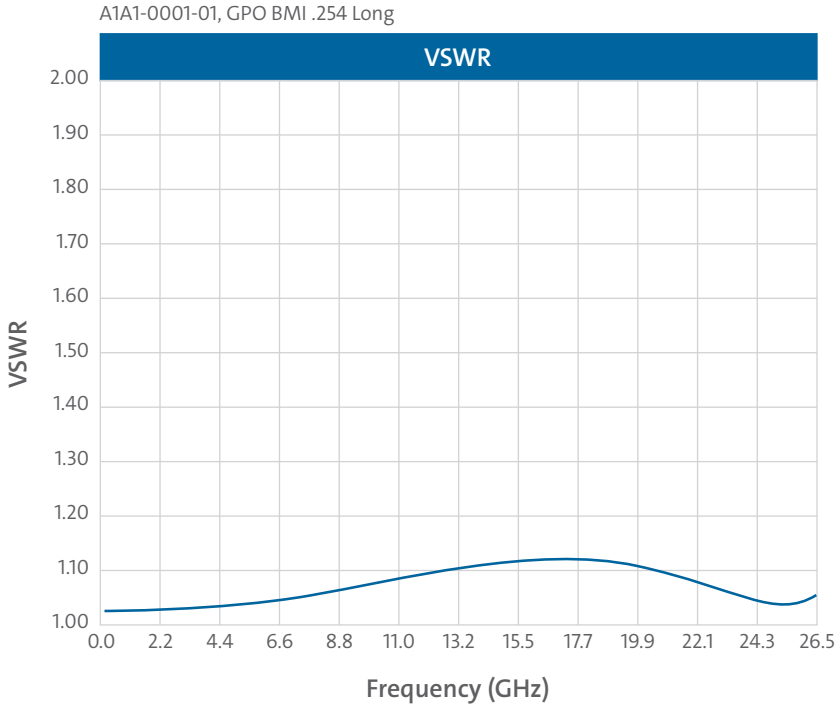



Figure 7A – GPO BMI VSWR Performance

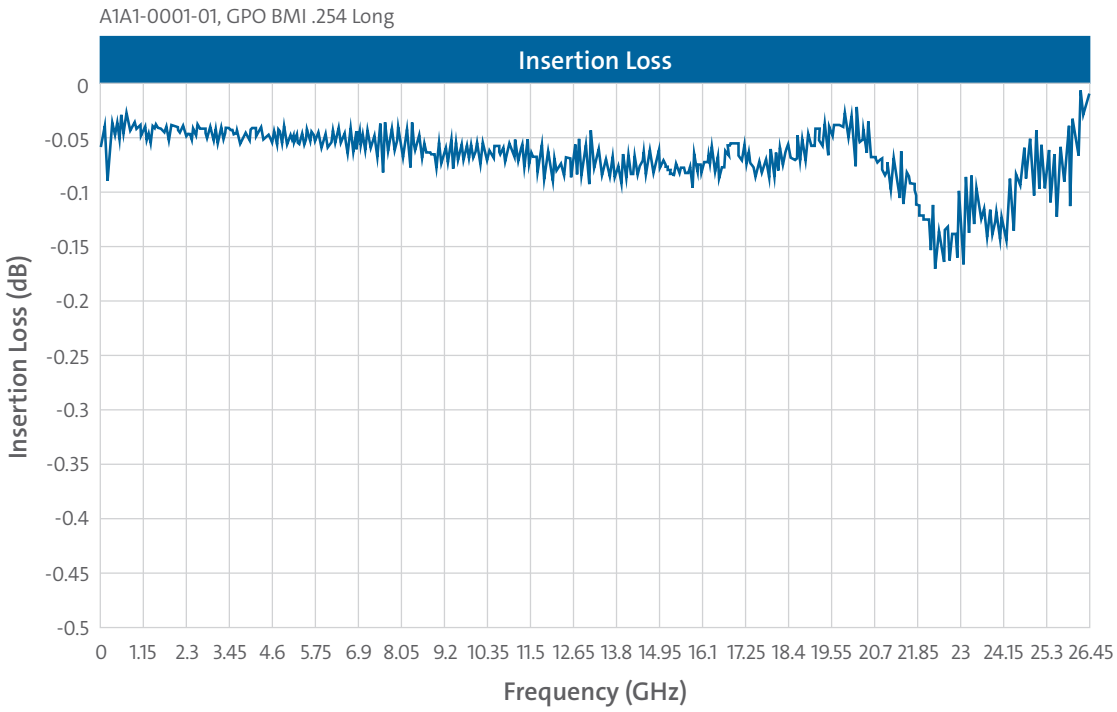



Figure 7B – GPO BMI Insertion Loss Performance

# 2.0 GPO®

## 2.4 GPO® VSWR and Insertion Loss

A014-D11-01, GPO Cable Connector

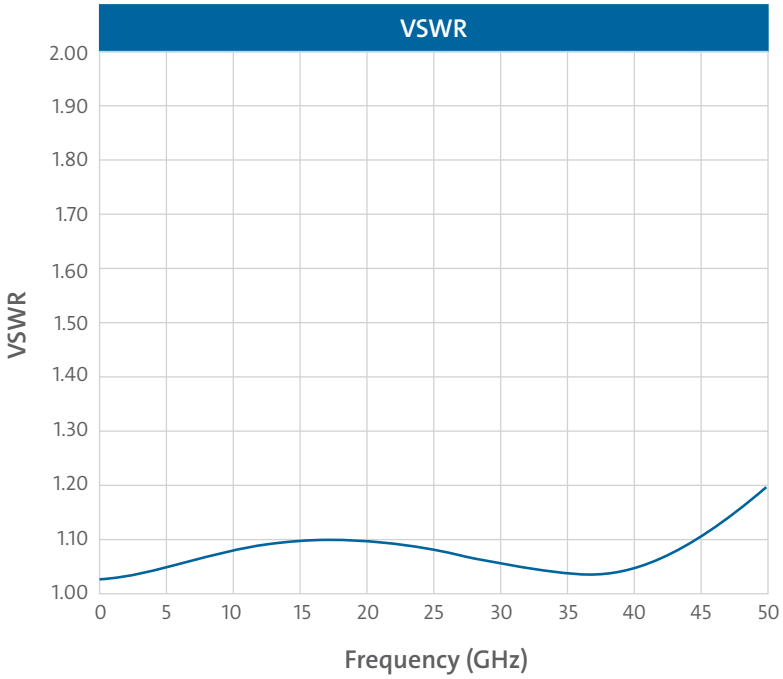



Figure 8 – GPO Cable Connector VSWR Performance

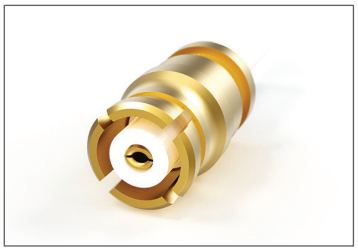


Figure 8A – GPO Cable Connector A014-D11-01

# 3.0 GPPO®

## 3.1 GPPO® Detents – Full and Smooth Bore

Table 3 shows the available GPPO detents, typical engage/disengage forces, and mating cycles.

### Table 3 – GPPO Detent Forces and Mating Cycles

| Detent | GPPO | | |
|---|---|---|---|
| | Engage* | Disengage* | Cycles (Minutes) |
| Full | 4.5 | 6.5 | 100 |
| Smooth Bore | 2.5 | 1.5 | 500 |

*The engage/disengage force values (shown in pounds) are typical and based upon actual data

## 3.2 GPPO Axial Misalignment

Figure 9 shows the GPPO VSWR electrical performance vs. frequency and axial misalignment.

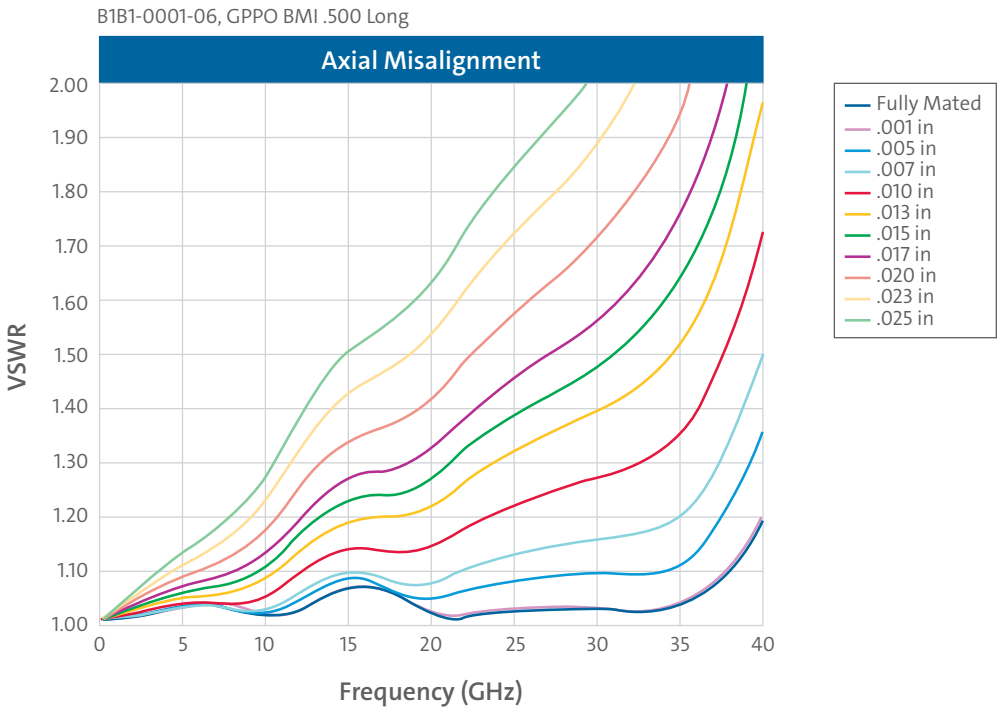



Figure 9 – GPPO Axial Misalignment Performance

# 3.0 GPPO®

## 3.3 GPPO® Radial Misalignment

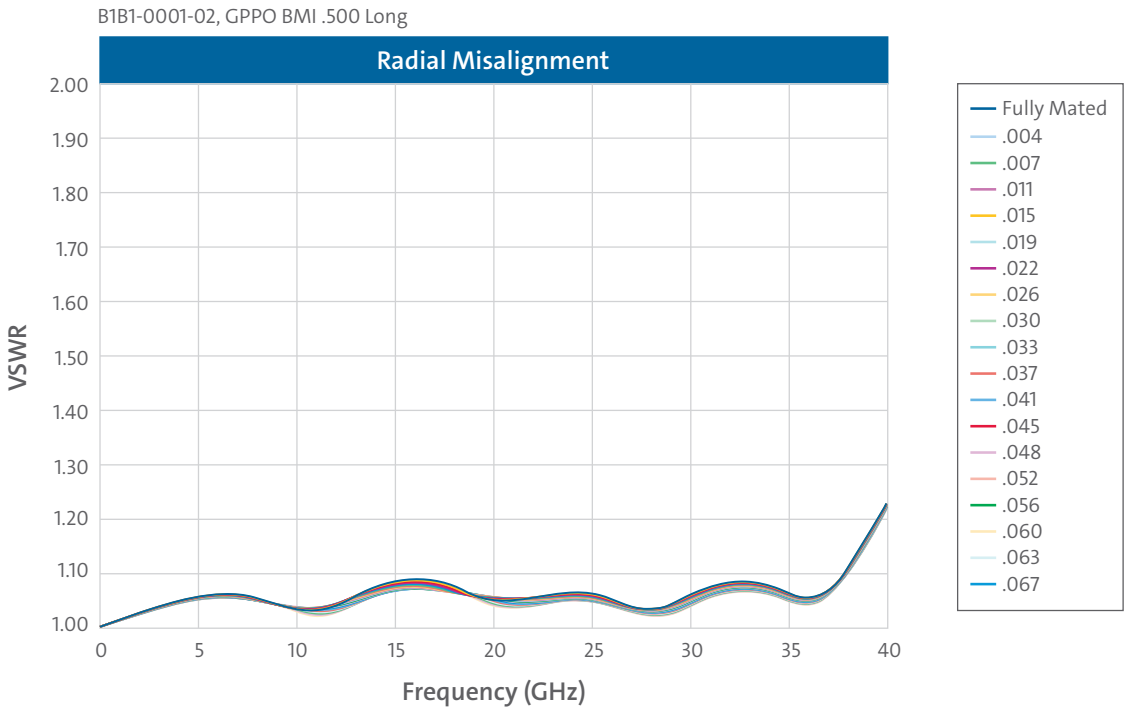



Figure 10 – GPPO Radial Misalignment Performance

## 3.4 GPPO VSWR and Insertion Loss

Figure 11 – GPPO BMI B1B1-0001-01

# 3.0 GPPO®

## 3.4 GPPO® VSWR and Insertion Loss

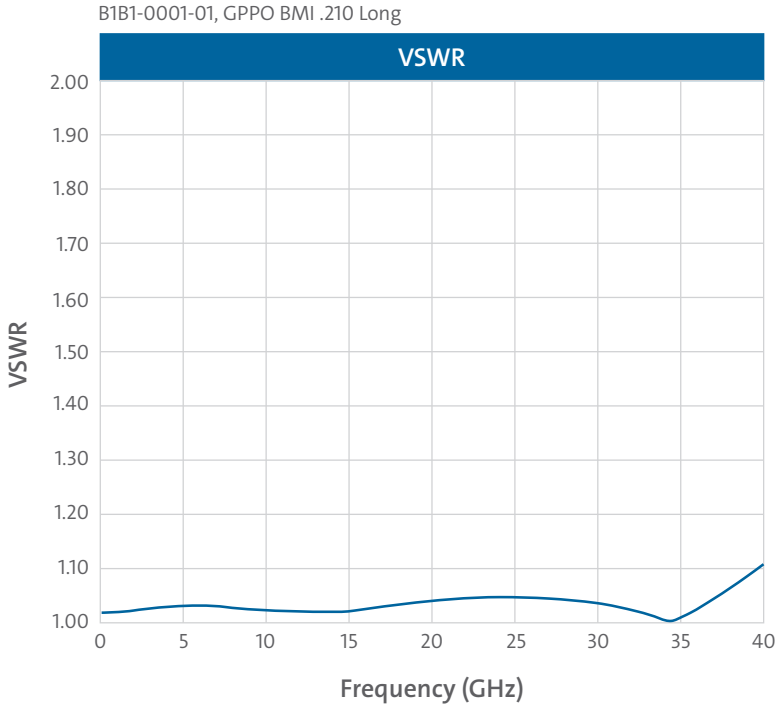



Figure 11A – GPPO BMI VSWR Performance

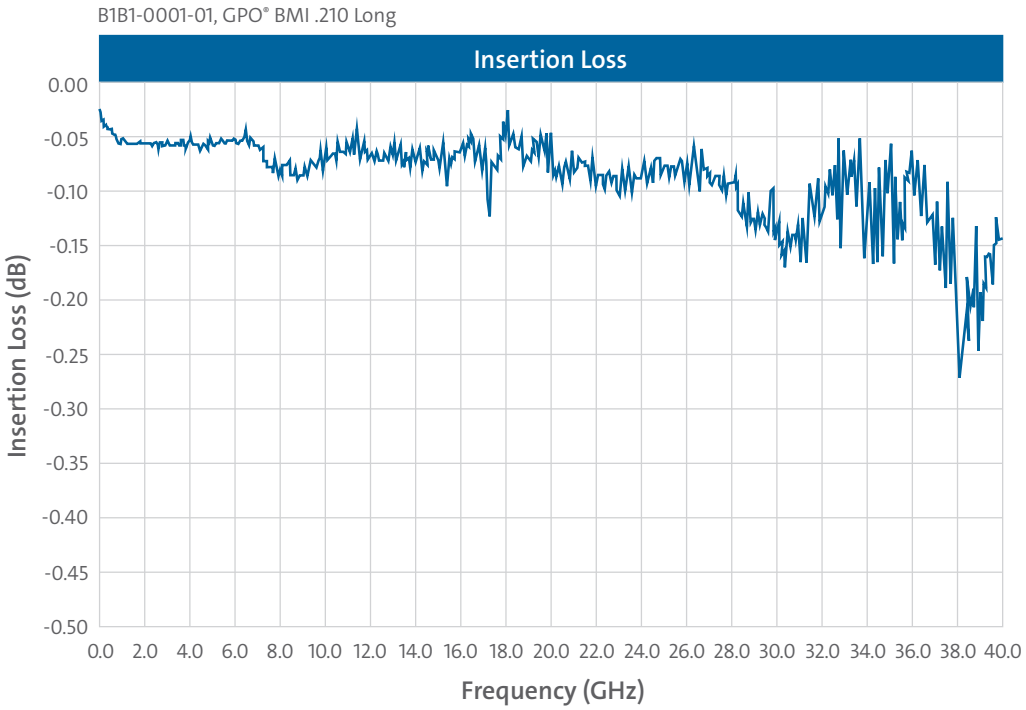



Figure 11B – GPPO BMI Insertion Loss Performance

# 3.0 GPPO®

## 3.4 GPPO® VSWR and Insertion Loss

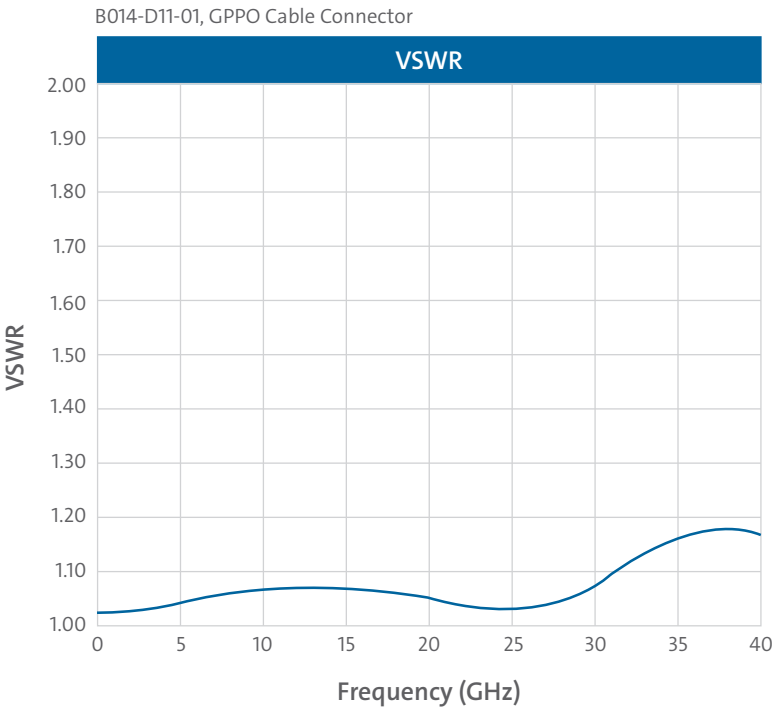



Figure 12 – GPPO Cable Connector VSWR Performance

Figure 12A – GPPO Cable Connector B014-D11-01

# 4.0 G3PO™

## 4.1 G3PO™ Detents – Full and Smooth Bore

Table 4 shows the available G3PO detents, typical engage/disengage forces, and mating cycles.

### Table 4 – G3PO Detent Forces and Mating Cycles

| Detent | G3PO | | |
|---|---|---|---|
| | Engage* | Disengage* | Cycles (Minutes) |
| Full | 2.5 | 4.5 | 100 |
| Smooth Bore | 1.2 | 1.0 | 500 |

*The engage/disengage force values (shown in pounds) are typical and based upon actual data

## 4.2 G3PO Axial Misalignment

Figure 13 shows the G3PO VSWR electrical performance vs. frequency and axial misalignment.

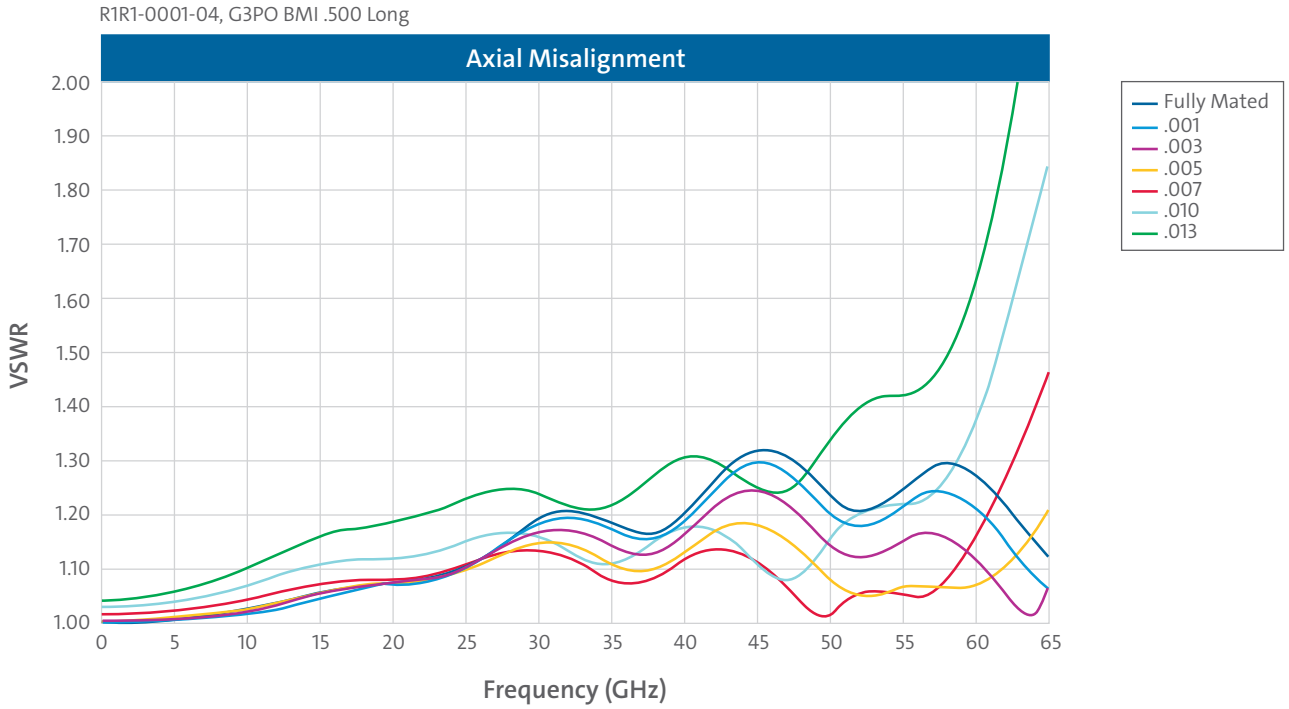



Figure 13 – G3PO Axial Misalignment Performance

# 4.0 G3PO™

## 4.3 G3PO™ Radial Misalignment

Figure 14 shows the G3PO VSWR electrical performance vs. frequency and radial misalignment.

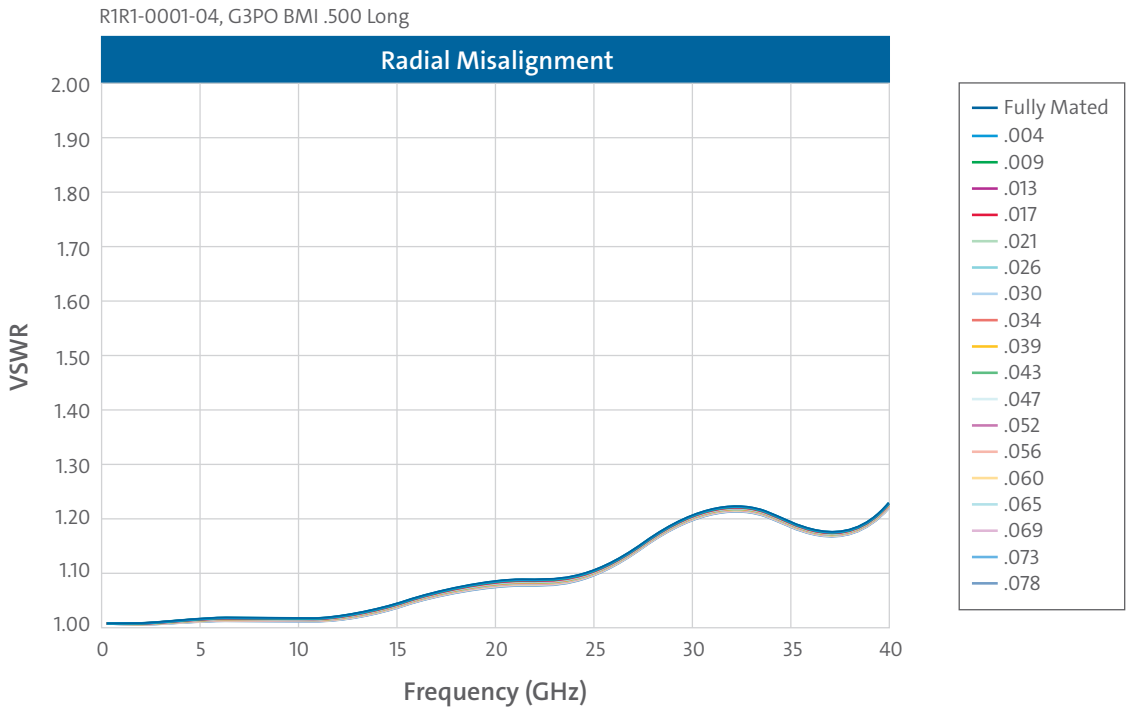



Figure 14 – G3PO Radial Misalignment Performance

## 4.4 G3PO VSWR and Insertion Loss

Figure 15 – G3PO BMI R1R1-0001-01

# 4.0 G3PO™

## 4.4 G3PO™ VSWR and Insertion Loss

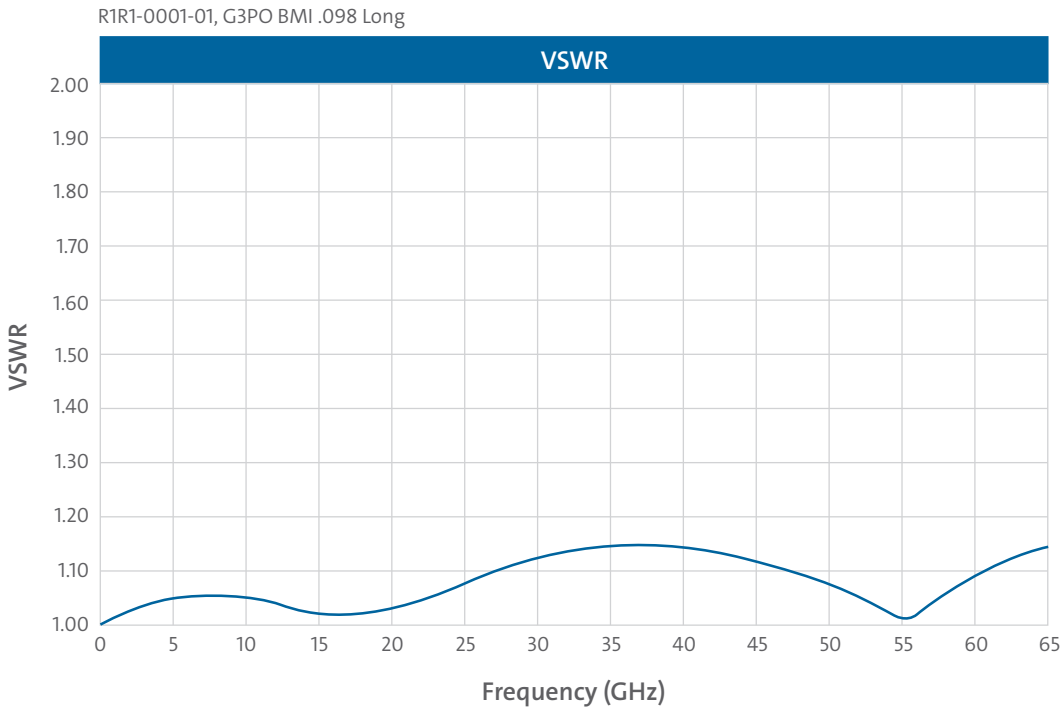



Figure 15A – G3PO BMI VSWR Performance

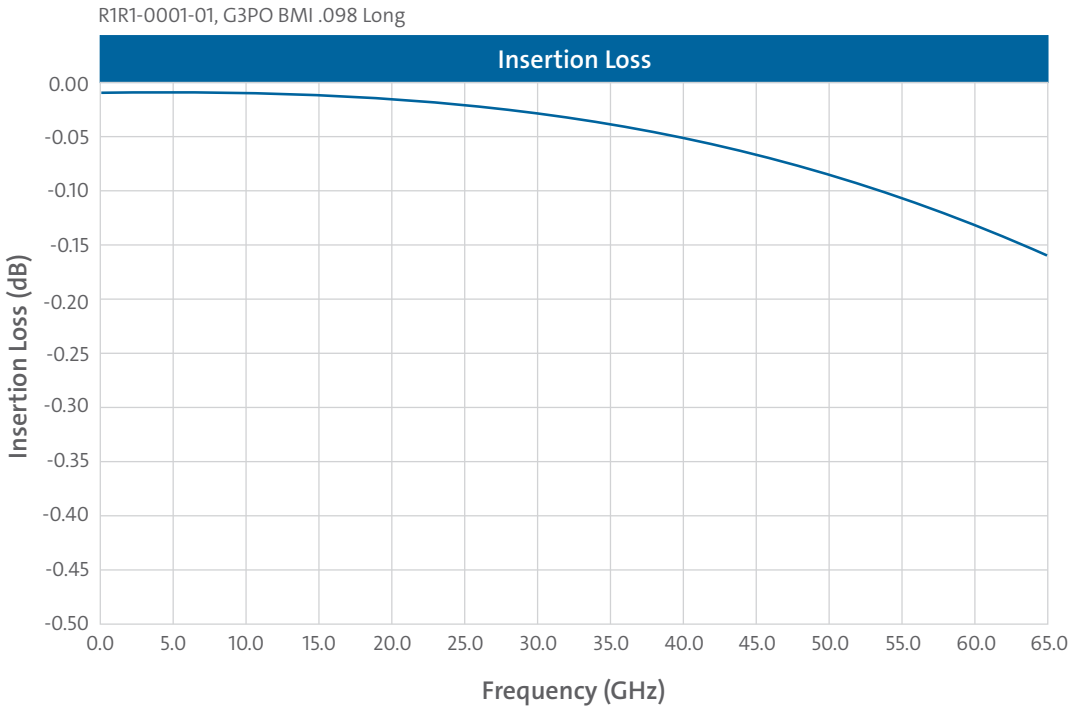



Figure 15B – G3PO BMI Insertion Loss Performance

# 4.0 G3PO™

## 4.4 G3PO™ VSWR and Insertion Loss

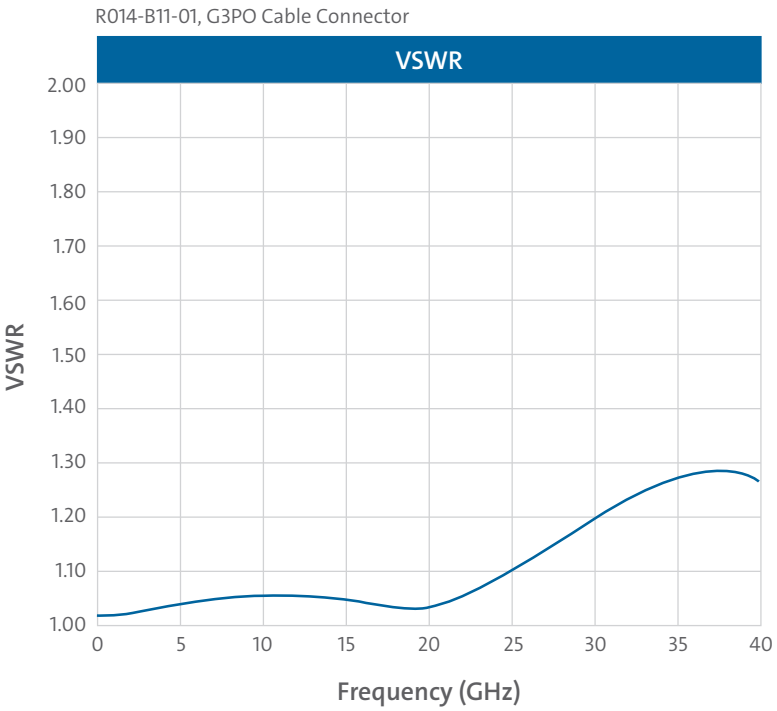



Figure 16- G3PO Cable Connector VSWR Performance

Figure 16A – G3PO Cable Connector R014-B11-01

# 5.0 G4PO™

## 5.1 G4PO™ Detents – Full and Smooth Bore

Table 5 shows the available G4PO detents, typical engage/disengage forces, and mating cycles.

### Table 5 – G4PO Detent Forces and Mating Cycles

| Detent | G4PO | | |
|---|---|---|---|
| | Engage* | Disengage* | Cycles (Minutes) |
| Full | .65 | 2.2 | 100 |
| Smooth Bore | .20 | .15 | 500 |

*The engage/disengage force values (shown in pounds) are typical and based upon actual data

## 5.2 G4PO VSWR

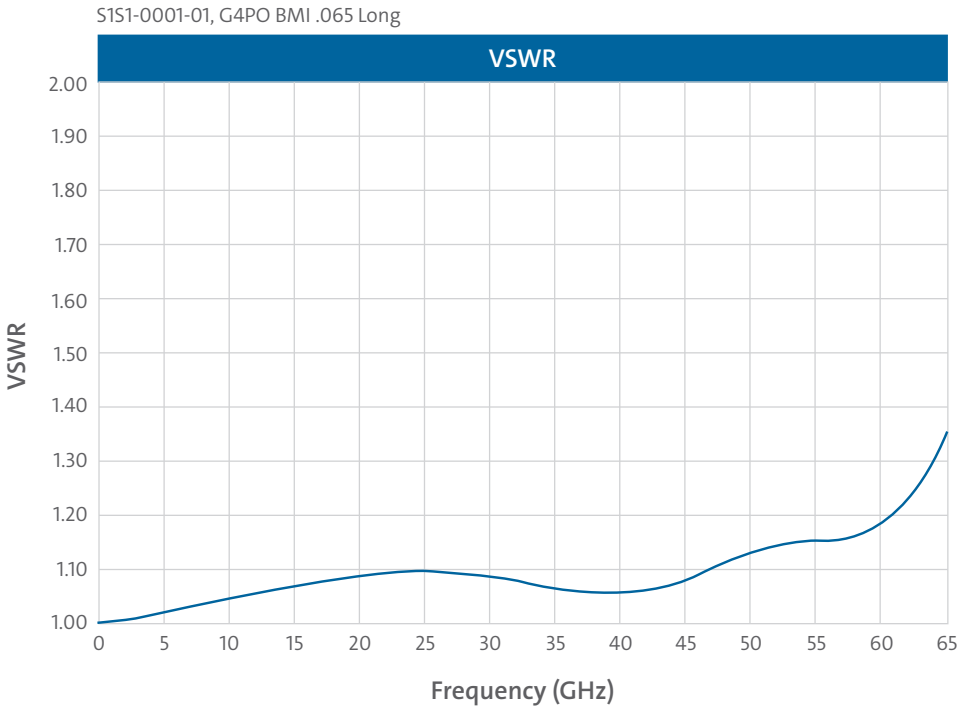



Figure 17 – G4PO BMI VSWR Performance

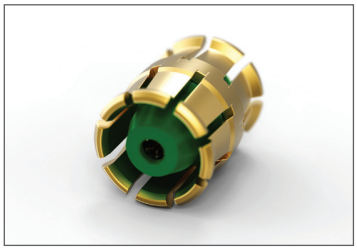


Figure 17A – G4PO BMI S1S1-0001-01

# 6.0 Electrical – GPO®, GPPO®, G3PO™, and G4PO™

## 6.1 General Electrical Specifications

### Table 6 – GPO®, GPPO®, G3PO™, and G4PO™ General Electrical Specifications

| Parameter | GPO | GPPO | G3PO | G4PO |
|---|---|---|---|---|
| Dielectric Withstanding Voltage (DWV) | 500 $V_{rms}$ | 325 $V_{rms}$ | 250 $V_{rms}$ | 250 $V_{rms}$ |
| Insulation Resistance (IR) | 5000 mohms @ 500 VDC | 5000 mohms @ 500 VDC | 3500 mohms @ 100 VDC | 3500 mohms @ 100 VDC |
| RF High Pot. @ 5 MHz | 325 $V_{rms}$ | 200 $V_{rms}$ | 150 $V_{rms}$ | 150 $V_{rms}$ |
| Corona Level @ 70,000 ft | 190 $V_{rms}$ | 125 $V_{rms}$ | 100 $V_{rms}$ | 100 $V_{rms}$ |
| Center Conductor Contact Resistance | 6.0 mohms max | 6.0 mohms max | 6.0 mohms max | 6.0 mohms max |

## 6.2 Average Power Handling

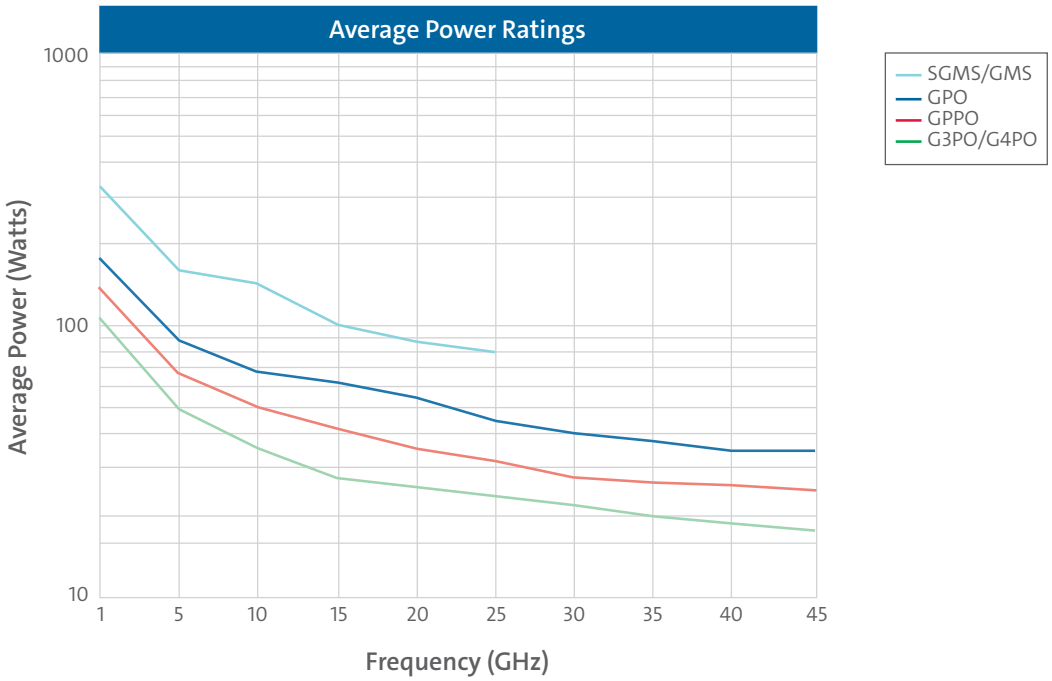



Figure 18 – GPO, GPPO, G3PO and G4PO Average Power Handling

# 6.0 Electrical – GPO®, GPPO®, G3PO™, and G4PO™

## 6.3 Temperature and Altitude Derating

### Table 7 – Typical Temperature and Altitude Derating Factors

| Temperature Degrees Celsius | Derating Factor |
|---|---|
| 0 | 1.2 |
| 40 | 1.0 |
| 80 | 0.8 |
| 120 | 0.6 |
| 160 | 0.4 |
| 200 | 0.2 |
| 240 | 0.05 |

| Altitude x 1000 ft | Derating Factor |
|---|---|
| 0 | 1.0 |
| 20 | 0.8 |
| 30 | 0.7 |
| 40 | 0.6 |
| 50 | 0.5 |
| 60 | 0.4 |
| 70 | 0.3 |

## 6.4 VSWR Derating

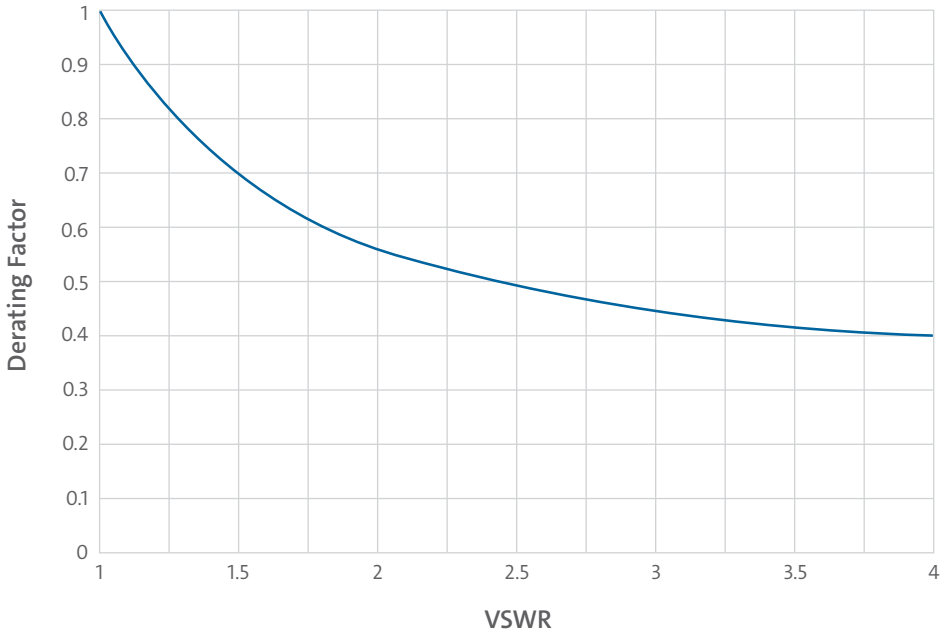



Figure 19 – Typical VSWR Derating Factors

# 7.0 Board-to-Board Tolerance Analysis

## 7.1 GPO® Minimum Tolerance Analysis

Figure 20 shows the minimum GPO® board-to-board tolerance analysis using a surface-mount configuration. The BMI length and associated gap are dependent on the board-to-board spacing, shroud reference plane (R/P), and solder thickness.

Determine the shroud R/P to shroud R/P:

| | |
|---|---|
| **.258 ± .005** | Board-to-board |
| **-.010 ± .001** | Shroud R/P |
| **-.010 ± .001** | Shroud R/P |
| **-.002 ± .001** | Solder thickness |
| **-.002 ± .001** | Solder thickness |
| **.234 ± .009** | Shroud R/P to R/P (-in) |

The minimum shroud R/P-to-R/P spacing is therefore .234 - .009 = .225-in. This dimension is also the maximum BMI length. This spacing ensures that the BMI does not bottom out between the shroud reference planes. The nominal BMI length is the minimum R/P-to-R/P spacing minus the BMI length tolerance (.001-in). The nominal BMI length is therefore .225 - .001 = .224-in.

Next determine the gap between the smooth bore shroud R/P and the BMI as follows:

| | |
|---|---|
| **.234 ± .009** | Shroud R/P to shroud R/P |
| **-.224 ± .001** | BMI length |
| **.010 ± .010** | Gap (-in) |

The tolerance analysis shows that the BMI can be flush (.010 - .010) to .020 (.010 + .010) away from the smooth bore shroud R/P. The gap tolerance should be minimized whenever possible to ensure optimal electrical performance.

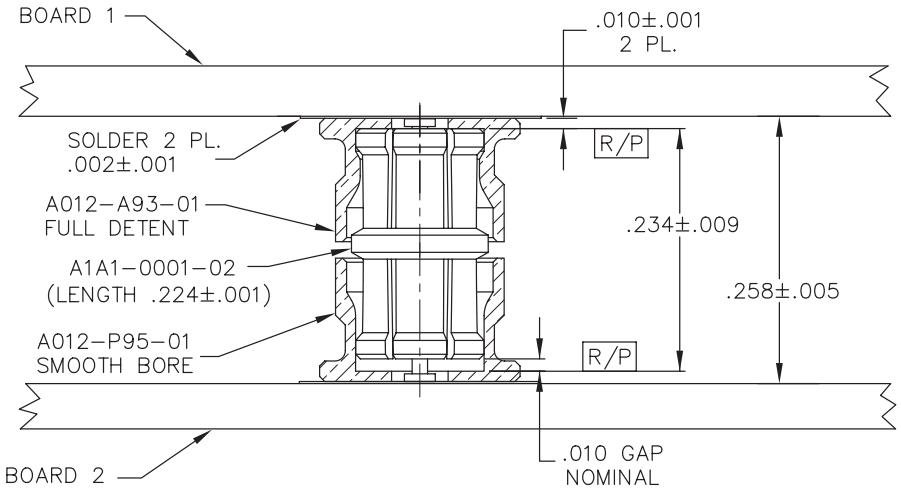



Figure 20 – GPO Minimum Board-to-Board Tolerance Analysis

# 7.0 Board-to-Board Tolerance Analysis

## 7.2 GPPO® Tolerance Analysis

Figure 21 shows a typical GPPO® board-to-board tolerance analysis using a surface-mount configuration. The BMI length and associated gap are dependent on the board-to-board spacing, shroud reference plane (R/P), and solder thickness.

Determine the shroud R/P to shroud R/P:

| | |
|---|---|
| **.360 ± .005** | Board-to-board |
| **-.067 ± .002** | Shroud R/P |
| **-.067 ± .002** | Shroud R/P |
| **-.002 ± .001** | Solder thickness |
| **-.002 ± .001** | Solder thickness |
| **.222 ± .011** | Shroud R/P to R/P (-in) |

The minimum shroud R/P-to-R/P spacing is therefore .222 - .011 = .211-in. This dimension is also the maximum BMI length. This spacing ensures that the BMI does not bottom out between the shroud reference planes. The nominal BMI length is the minimum R/P-to-R/P spacing minus the BMI length tolerance (.001-in). The nominal BMI length is therefore .211 - .001 = .210-in.

Next determine the gap between the smooth bore shroud R/P and the BMI as follows:

| | |
|---|---|
| **.222 ± .011** | Shroud R/P to shroud R/P |
| **-.210 ± .001** | BMI length |
| **.012 ± .012** | Gap (-in) |

The tolerance analysis shows that the BMI can be flush (.012 - .012) to .024 (.012 + .012) away from the smooth bore shroud R/P. The gap tolerance should be minimized whenever possible to ensure optimal electrical performance.

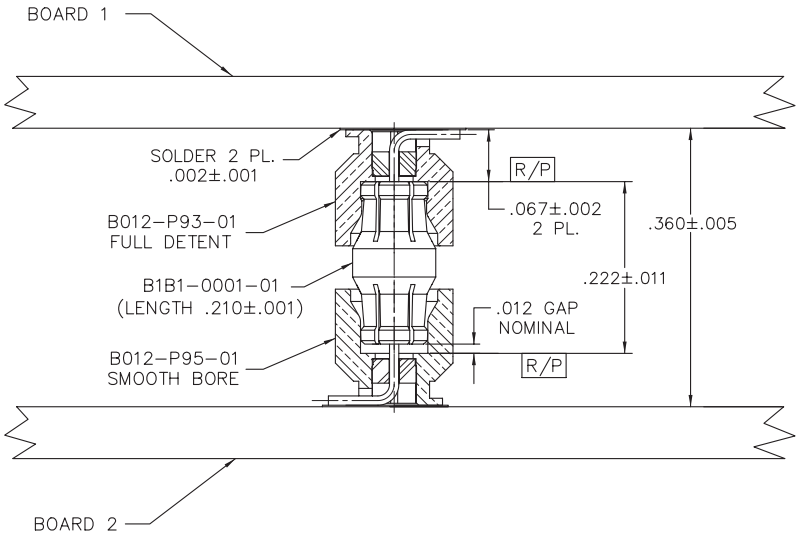



Figure 21 – GPPO Board-to-Board Tolerance Analysis

# 7.0 Board-to-Board Tolerance Analysis

## 7.3 GPPO® Minimum Tolerance Analysis

Figure 22 shows a typical GPPO® board-to-board tolerance analysis using a surface-mount configuration. The BMI length and associated gap are dependent on the board-to-board spacing, shroud reference plane (R/P), and solder thickness.

Determine the shroud R/P to shroud R/P:

| | |
|---|---|
| **.196 ± .005** | Board-to-board |
| **-.008 ± .001** | Shroud R/P |
| **-.008 ± .001** | Shroud R/P |
| **-.002 ± .001** | Solder thickness |
| **-.002 ± .001** | Solder thickness |
| **.176 ± .009** | Shroud R/P to R/P (-in) |

The minimum shroud R/P-to-R/P spacing is therefore .176 - .009 = .167-in. This dimension is also the maximum BMI length. This spacing ensures that the BMI does not bottom out between the shroud reference planes. The nominal BMI length is the minimum R/P-to-R/P spacing minus the BMI length tolerance (.001-in). The nominal BMI length is therefore .167 - .001 = .166-in.

Next determine the gap between the smooth bore shroud R/P and the BMI as follows:

| | |
|---|---|
| **.176 ± .009** | Shroud R/P to shroud R/P |
| **-.166 ± .001** | BMI length |
| **.010 ± .010** | Gap (-in) |

The tolerance analysis shows that the BMI can be flush (.010 - .010) to .020 (.010 + .010) away from the smooth bore shroud R/P. The gap tolerance should be minimized whenever possible to ensure optimal electrical performance.

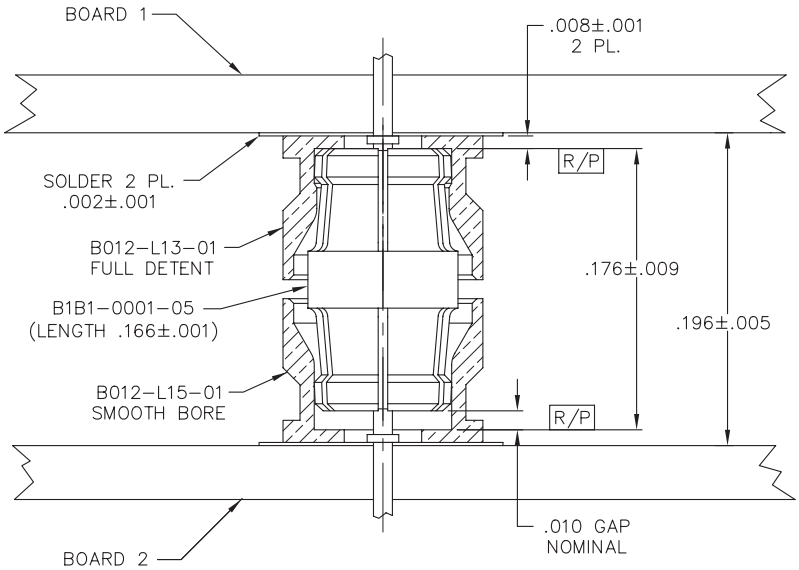



Figure 22 – GPPO Minimum Board-to-Board Tolerance Analysis

# 7.0 Board-to-Board Tolerance Analysis

## 7.4 G3PO™ Tolerance Analysis

Figure 23 shows a typical G3PO™ board-to-board tolerance analysis using a surface-mount configuration. The BMI length and associated gap are dependent on the board-to-board spacing, shroud reference plane (R/P), and solder thickness.

Determine the shroud R/P to shroud R/P:

| | |
|---|---|
| **.1485 ± .002** | Board-to-board |
| **-.020 ± .001** | Shroud R/P |
| **-.020 ± .001** | Shroud R/P |
| **-.002 ± .001** | Solder thickness |
| **-.002 ± .001** | Solder thickness |
| **.1045 ± .006** | Shroud R/P to R/P (-in) |

The minimum shroud R/P-to-R/P spacing is therefore .1045 - .006 = .0985-in. This dimension is also the maximum BMI length. This spacing ensures that the BMI does not bottom out between the shroud reference planes. The nominal BMI length is the minimum R/P-to-R/P spacing minus the BMI length tolerance (.0005-in). The nominal BMI length is therefore .0985 - .0005 = .098-in.

Next determine the gap between the smooth bore shroud R/P and the BMI as follows:

| | |
|---|---|
| **.1045 ± .006** | Shroud R/P to shroud R/P |
| **-.098 ± .0005** | BMI length |
| **.0065 ± .0065** | Gap (-in) |

The tolerance analysis shows that the BMI can be flush (.0065 - .0065) to .013 (.0065 + .0065) away from the smooth bore shroud R/P. The gap tolerance should be minimized whenever possible to ensure optimal electrical performance.

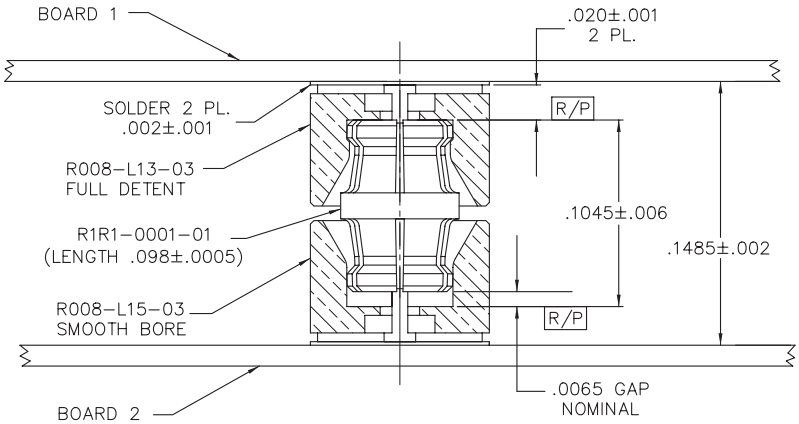



Figure 23 – G3PO Board-to-Board Tolerance Analysis

# 7.0 Board-to-Board Tolerance Analysis

## 7.5 G4PO™ Tolerance Analysis

Figure 24 shows a typical G4PO™ board-to-board tolerance analysis using a surface-mount configuration. The BMI length and associated gap are dependent on the board-to-board spacing, shroud reference plane (R/P), and solder thickness.

Determine the shroud R/P to shroud R/P:

| | |
|---|---|
| **.122 ± .0015** | Board-to-board |
| **-.0235 ± .001** | Shroud R/P |
| **-.0235 ± .001** | Shroud R/P |
| **-.002 ± .001** | Solder thickness |
| **-.002 ± .001** | Solder thickness |
| **.071 ± .0055** | Shroud R/P to R/P (-in) |

The minimum shroud R/P-to-R/P spacing is therefore .071 - .0055 = .0655-in. This dimension is also the maximum BMI length. This spacing ensures that the BMI does not bottom out between the shroud reference planes. The nominal BMI length is the minimum R/P-to-R/P spacing minus the BMI length tolerance (.0005-in). The nominal BMI length is therefore .0655 - .0005 = .065-in.

Next determine the gap between the smooth bore shroud R/P and the BMI as follows:

| | |
|---|---|
| **.071 ± .0055** | Shroud R/P to shroud R/P |
| **-.065 ± .0005** | BMI length |
| **.006 ± .006** | Gap (-in) |

The tolerance analysis shows that the BMI can be flush (.006 - .006) to .012 (.006 + .006) away from the smooth bore shroud R/P. The gap tolerance should be minimized whenever possible to ensure optimal electrical performance.

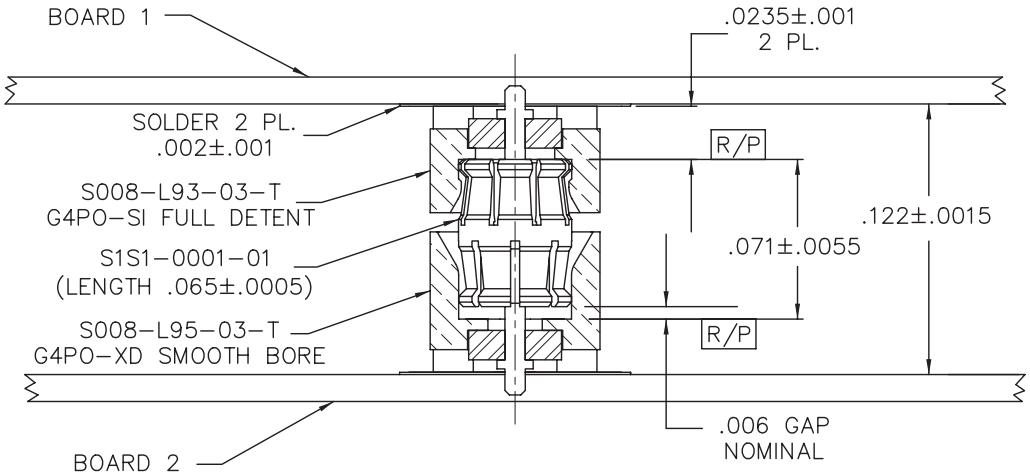



Figure 24 – G4PO Board-to-Board Tolerance Analysis

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